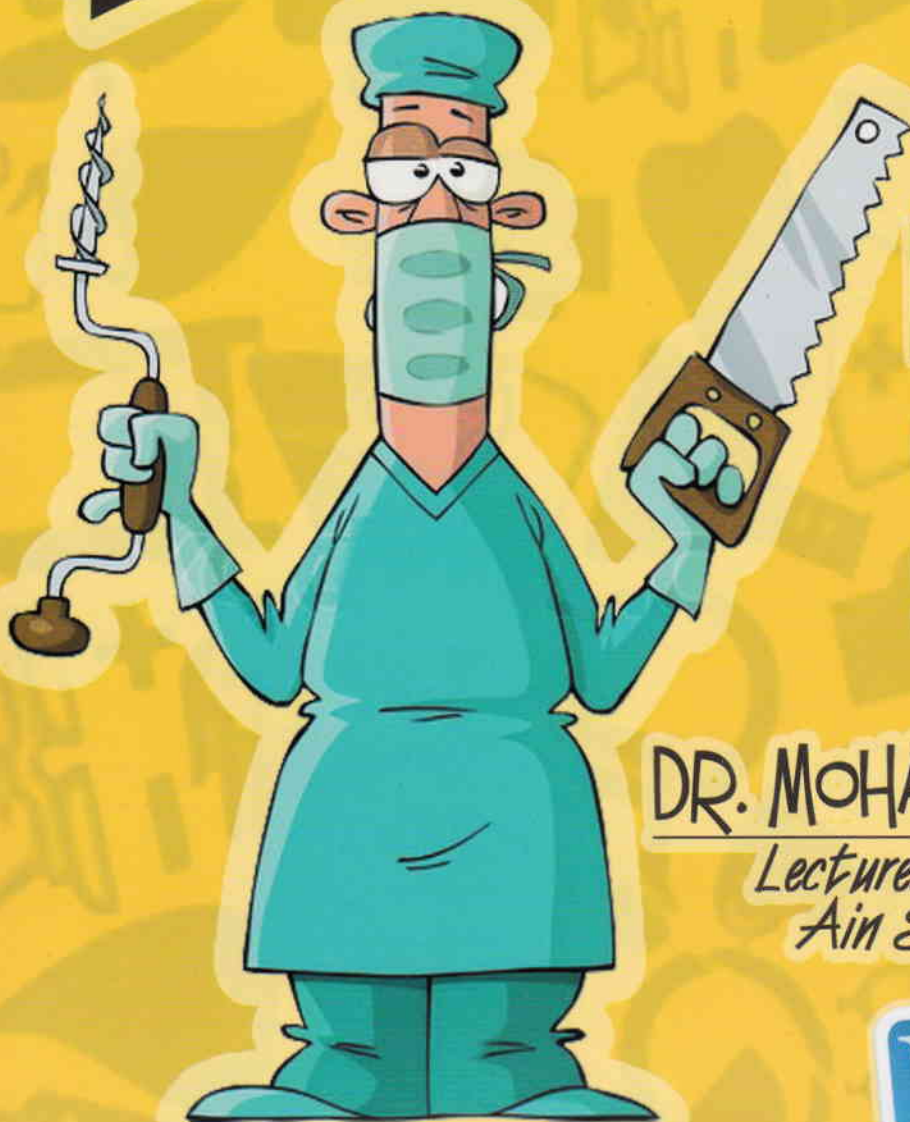


SURGI-TOONS



PART "1" GENERAL SURGERY

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*Lecturer of General Surgery
Ain Shams university*



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Really , I'm happy to Introduce such a diamond for you

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HOW TO USE THIS BOOK ?

This Book is designed to Simplify "Surgery" and make it amusing as it should be. Each branch is mind mapped in the form of tables, algorithms and diagrams to make it easy for you to revise the whole branch in a matter of hours!

There's a bunch of Special Add-ons following each branch in this book, which will make your study driven to the target...



TWEET W GEBNA

Tweets of Information that you may miss during studying the branch, Along with some important points from the MCQs All Together in a couple of papers!!



KEYS TO CASES

Grab the ideas of important Clinical cases, what you exactly need to know about each case in a few words



QUESTION BANK

Questions from previous exams arranged and categorized according to the subject to give you an accurate statistic to drive your attention to the important and repeated questions.



TAKE YOUR NOTES

*If you find some extra information useful,
Go on! Add them there!!*

Have a blast enjoying "SURGI-TOONS" :)

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SURGI- TOONS

BREAST SURGERY



Michael Safwat
MBBCh - Ain shams university

ACUTE LACTATION MASTITIS

- **DEFINITION:** Acute bacterial inflammation that occurs during lactation
- **ORGANISM:** STAPH.
- **ROUTE :** DIRECT SPREAD
- **PRECIPITATING factor** → **MILK ENGORGEMENT**, Nipple abrasions, bad hygiene, bad general cond.
- **CLINICAL PICTURE:**

	MILK ENGORGEMENT	CELLULITIS (MASTITIS)	ACUTE ABSCESS	CHRONIC ABSCESS
Pain	Dull aching	↑	Throbbing	Attacks of remissions & exacerbations
Pyrexia	Mild	Continuous ↑	Hectic fever	
Signs	1) Enlargement, tenderness 2) <u>NO signs of inflammation</u>	1) <u>Signs of inflammation</u> 2) <u>AXILLARY LNS:</u> ▪ Enlarged ▪ Tender ▪ Firm ▪ Mobile	1) Edema of skin 2) FLUCTUATION IS LATE "DON'T WAIT"	Tender swelling with yielding center (PAGET'S TEST)
Invest.	▪ ↑ TLC, ↑ ESR, ↑ CRP, C/S for the choice of antibiotics ▪ U/S → site & type of abscess ▪ If no response within 2 weeks → BIOPSY			
Treatment	Prophylactic treatment: ▪ Last 2 months of pregnancy → Massage of Nipple & Panthanol ▪ At time of delivery: If Fissures are present → Paint fissures with anti-septics			
	Stop Lactation: - If infant > 9 months → by giving PARLODEL - If Infant < 9 months → Stop lactation from affected side, Feeding from the other side			
	Evacuate breast	+ Augmentin (1gm/8hrs) & analgesics + Hot fomentations	1) General anaesthesia 2) Radial incision not reaching nipple, areola 3) Destroy loculi by finger 4) COUNTER INCISION if in an UN-dependent area 5) Antibiotics & dressing	

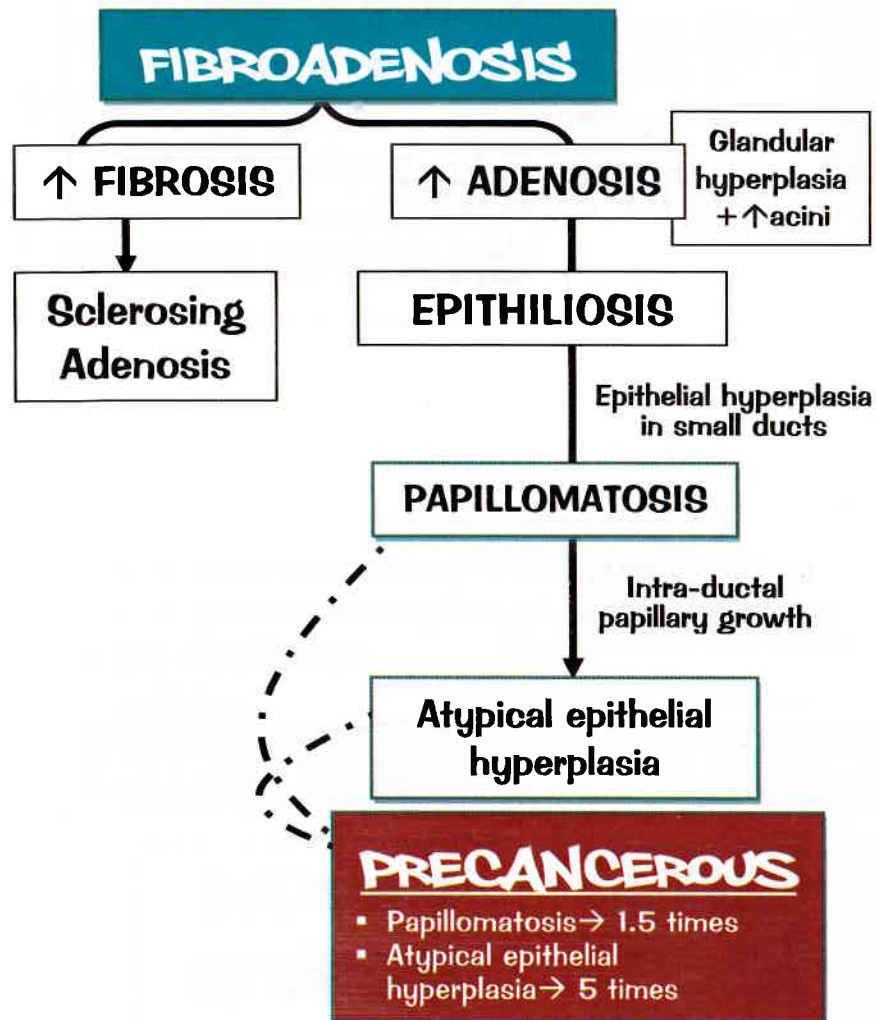
D. D... MASTITIS CARCINOMATOSIS

	ACUTE LACTATION MASTITIS	MASTITIS CARCINOMATOSIS
General C/O	FAHM	Anorexia, loss of weight
Pain	Acute, rapidly progressive	Gradual, Slowly progressive
Signs of inflammation	+ve	-ve
Axillary LNs	Enlarged, Tender, firm, mobile	Enlarged NOT tender, Hard, fixed



FIBRO-ADENOSIS

PATHOLOGY & OTHER NAMES:



FIBROCYSTIC CHANGES

Fibrous tissue replaces the elastic & fatty tissue → Obstruction of duct:

- Unilateral
- Bilateral
- Affecting sector of breast → "Sector Mastitis"

This leads to cyst formation:

- Small (Micro-cyst)
- Large (macro-cyst)
- If Cysts coalesce → Blue-domed cyst of BLOODGOOD

ANDI

Aberration of Normal development & Involution of Breast

Some consider it as a normal variant

BLUE DOMED CYST OF "BLOOD GOOD"

- Large cyst contain Altered blood دم زفر
- DD: bluish, greenish discharge from Nipple



CLINICAL PICTURE

Female (30 years) With Cyclic changes of
Multiple painful breast lump $\pm$ discharge $\pm$ LN⁺⁺

MASTALGIA & MASTODYNIA

- $\uparrow\uparrow$ PMT
- Dull aching pain;
 - ✓ $\uparrow$ Pre-menstrually or by Breast movement
 - ✓ $\downarrow$ Post-menstrually or by breast support

BREAST LUMP

- Commonly Bilateral
- Solid or cystic
- Freely mobile
- Diffuse

DISCHARGE

- Clear
- Yellow
- If retention Cysts
→ greenish

LN⁺⁺

- Enlarged
- Elastic
- Tender
- Mobile

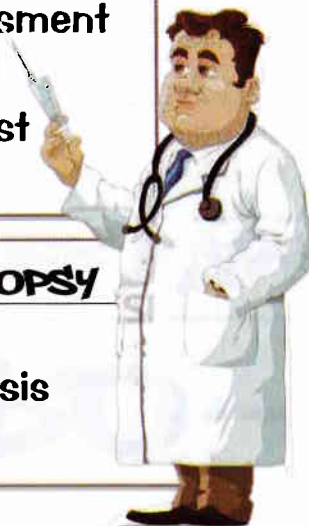
FELT BY THE TIP
OF FINGERS NOT
BY FLAT OF HAND

INVESTIGATIONS

- For the lump → Triple assessment
- For Discharge → Cytological examination & Benzidine test
- For Cyst → Aspiration

INDICATIONS FOR BIOPSY

- Recurrent cysts
- Sclerosing Adenosis
- Cancer



TREATMENT

LIFE STYLE

- Firm bra
- # Tea, coffee
- Vitamin E

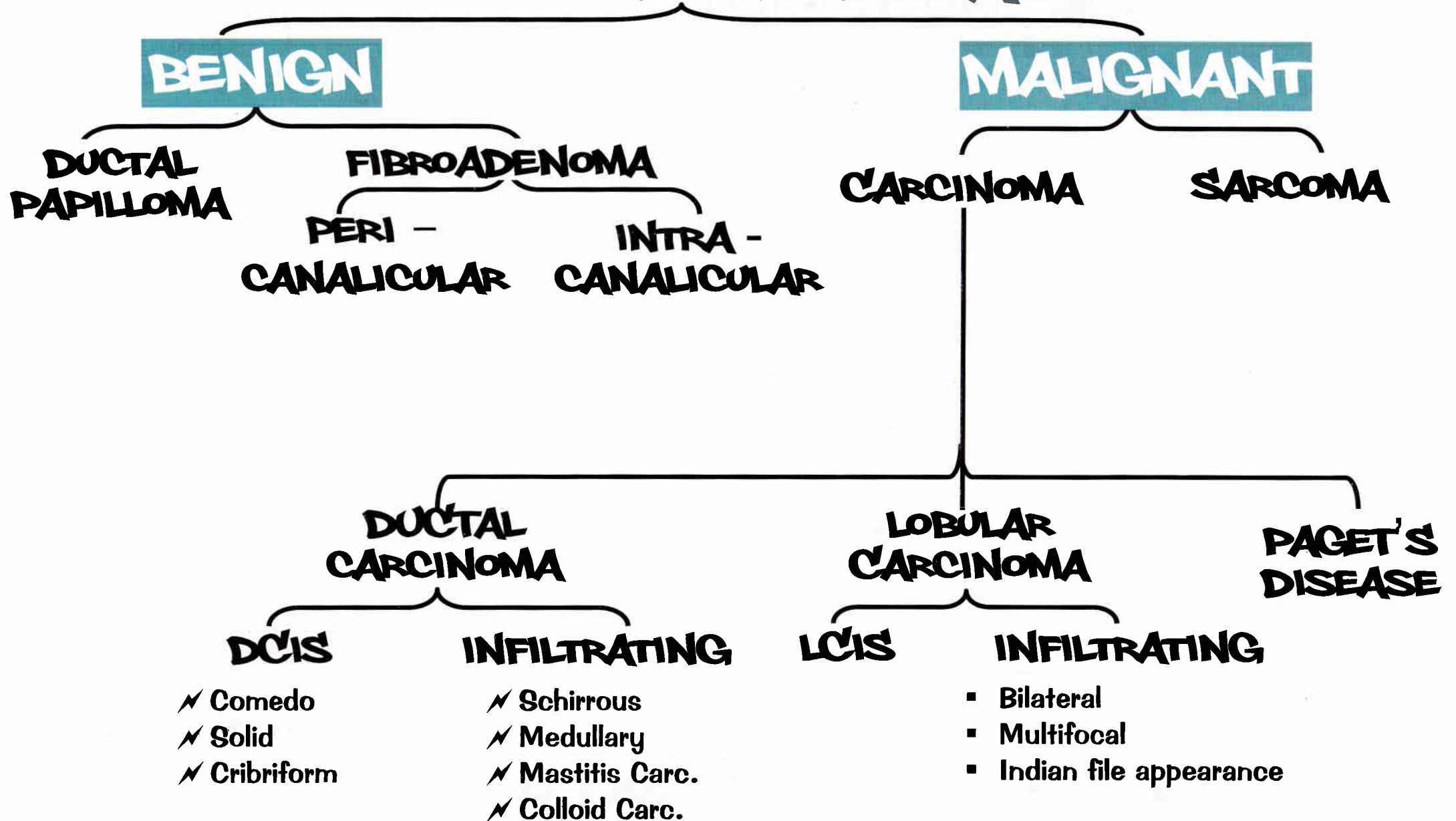
MEDICAL

- Analgesics
- Prim Rose Oil
- Parlodel
- Danazol
- Psychotherapy

SURGERY

- Biopsy
- Aspiration of cysts
- If cysts are recurrent, or Cyst of Blood-good → Excision

TUMORS OF THE BREAST



BENIGN TUMORS OF THE BREAST

DUCT PAPILLOMA

- Benign tumor of one of the main ducts .
- It's the **MOST COMMON CAUSE OF BLEEDING PER NIPPLE**
- Macro → Single pedunculated mass, may ulcerate
- Micro → Vascular CT core + hyperplastic epithelium

CLINICAL PICTURE

Female, 30-40 years with bleeding per nipple + Swelling + 2 NO

- Bleeding → Zonal pressure will reveal discharge
- Swelling → RETENTION CYST
.. Single, Small, Near nipple ..
- 2 NO → NO pain, NO LNs enlargement

INVESTIGATIONS

- ⊕ دم → For the discharge : Benzidine test
- ⊕ تلوغرة → For the Papilloma: Glactography ..(filling defect)
- ⊕ صدر → For the rest of the breast : Mammography

TREATMENT

Micro-docheotomy & histopathology

It's **PRECANCEROUS (10%)**

FIBROADENOMA

Benign tumor of the breast affecting Fibrous & Glandular element
MOST COMMON CAUSE OF BREAST MASS IN YOUNG FEMALE

	Peri-Canalicular (Hard)	Intra-Canalicular (Soft)
PT.	Female, 20-30 years	Female, 30-50 years
Micro	▪ FIBROUS ELEMENT DOMINATES ▪ Fibrosis occurs AROUND acini & ducts	▪ GLANDULAR ELEMENT DOMINATES ▪ Fibrosis INVAGINATES ducts
Macro	▪ NUMBER: Single ▪ SIZE: Small ▪ SURFACE: SMOOTH surface كورسيه مقلول ▪ CONSISTENCY: Firm ▪ CUT SECTION: WHORLY APPEARANCE ▪ CAPSULE: Well circumscribed . (Capsule → True + False cap.)	▪ NUMBER: Single ▪ SIZE: Large ▪ SURFACE: LOBULATED surface كورسيه متشطرط ▪ CONSISTENCY: Soft ▪ CUT SECTION: CENTRAL NECROSIS ▪ CAPSULE: Incomplete capsule
C/O	Painless lump	Painful rapidly growing lump
O/E	Painless Breast lump, mobile: "BREAST MOUSE" with No LNs enlargement	Painful rapidly growing lump, mobile, with no LNs enlargement
Malig.	Never turn malignant	May Turn → SARCOMA
TTT	Enucleation (Circum-areolar incision)	If small : ✓ Excision with safety margin, Biopsy If Large (cystosarcoma Phylloides) : ✓ Wide local excision or Simple mastectomy

CYSTOSARCOMA PHYLLOIDES:

- Type of Intra-canalicular fibroadenoma that reaches large size (20-30 cm)
- Differentiated from Fungating carcinoma by **"PROBE TEST"** .. probe passes
- TTT: Simple mastectomy

CARCINOMA

DUCTAL CARCINOMA

DCIS

✓ Solid

✓ Cribriform

✓ Comedo



Turns to Invasive Ductal carcinoma after 2 years

C/O :Non palpable malignancy

Biopsy by self-retaining needle under mamography

GRADING: VAN-NYS SYSTEM

LOW GRADE

Excision

HIGH GRADE

Excision with
RADIOTHERAPY

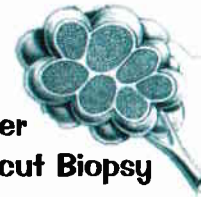
INFILTRATING

- ✓ Schirrous (Not otherwise specified)
- ✓ Medullary
- ✓ Mastitis Carcinoma
- ✓ Colloid Carcinoma (Mucinous)

LOBULAR CARCINOMA

LCIS

- Discovered accidentally after mammography → By Core-cut Biopsy
- No micro-calcifications
- It's a risk factor for Cancer breast..
- Turns Invasive Ductal carcinoma after 15 years
- Management :
 - 1) Follow up
 - 2) Prophylactic Tamoxifen
 - 3) If there's +ve Family History → MRM + reconstructive surgery



COMEDO TYPE OF DCIS

- Central Necrosis
- Secretes Pasty blood Tinged Material
- BAD PROGNOSIS



PAGET'S DISEASE

INFILTRATING

Bilateral

Multifocal

Indian file appearance



PROPHYLAXIS FOR CIS

- Self-examination in 5th day post-menstrual
- Examination every 6 months
- Mammography every 2 years by oblique lateral view (1 year in HRG)

INFILTRATING DUCTAL CARCINOMA

	SCHIRROUS carcinoma (Not otherwise specified)	MEDULLARY carcinoma (Encephaloid)	COLLOID carcinoma (Mucinous)	MASTITIS CARCINOMATOSIS
Incidence	Most common type .. 75%	6%		During Lactation
Pathology	- Extensive Fibrous Tissue Macroscopically: - Hard mass, infiltrating edges - Cut surface → CRITTY sensation, areas of Hge, Necrosis Microscopically: - Malignant rounded cells, Fibrous tissues 	- Extensive Malignant cells Macroscopically: - SOFT like Brain - Cut surface → CENTRAL NECROSIS Microscopically: - Malignant cells, little fibrous tissue, Lymphocytic infiltration 	Macroscopically: - SOFT mass HONEY-COMB app. Microscopically: - Spheroidal cells producing mucoid material ..SIGNET RING app.. 	HIGHLY AGGRESSIVE INVOLVES AT LEAST 1/3 BREAST 
Clinical picture	Patient → Female, 60 years O/E: - Dimpling..(Cooper's ligament) - Retracted nipple..(Milk duct)	Patient: Female, 30 years		Female, Lactating - C/O: Anorexia, Slowly progressive pain - O/E: Enlarged LNs, No signs of inflammation
Prognosis	Bad	Good	Good .. BAD prognosis in stomach ..	Bad

WQ: PATHOLOGY OF CANCER BREAST

INCIDENCE

✓ Most common malignancy in Egyptian females

✓ Most common site is **UPPER LATERAL QUAD (60%)**

TYPE OF PATIENT:

✓ 99% in females

✓ Age > 20 years → **Mean age of affection is 60 years**

PREDIPOSING FACTORS

نايبة أشعة ، متجوزتش و مخلفتش و مرضعتش ، عجوزة
و من عيلة ، خمرجية و بتبرشم و تخينة مبتتحرکش

- Female , Nulliparous, peak of age 60 years
- Early menarche, late menopause
- Positive family history
- Alcoholics, OCPs, Inactive, Obese
- **HIGH RISK FACTORS:**

- 1) Pre-cancerous lesions ..Papilloma, LCIS..
- 2) Previous affection with Cancer breast

FAMILIAL CANCER BREAST

- ❖ BRCA 1 (chromosome 17)
- ❖ BRCA 2 (chromosome 13)
- ❖ Lu-Frumin syndrome (mutation in gene P53)
- ❖ Goddwen syndrome
(Assoc. with PAPILLARY CARCINOMA OF THYROID)

CLASSIFICATIONS

See Before ...

SPREAD

Lymphatic, blood spread, direct spread

STAGING

TNM + Manchester

PROGNOSIS

Good + bad indicators ...

Prognostic Indicators

- Size
- LNs affection
- Invasion
- Metastatic potential according to histopathological type

BAD PROGNOSTIC INDICATORS

- Male
- Young age
- High grade
- Axillary LNs +ve
- Pregnancy, lactation
- Lobular carcinoma
- DCIS (Comedo)
- Mastitis carcinomatosis

GOOD PROGNOSTIC INDICATORS

- Low grade carcinoma
- Axillary LN-ve
- Paget disease of nipple
- Medullary carcinoma
- Colloid carcinoma



SPREAD

LYMPHATIC .. BY EMBOLISATION & PERMEATION..

.. MOST COMMON METHOD OF SPREAD ..

- Axillary LNs→ Supraclavicular LNs , Rarely to Internal mammary LNs
- Lymphatic from Lower inner quadrant pierce rectus sheath → liver nodules
→ May metastasize as "SISTER JOSEPH NODULE"
- Obstruction → Peau d'orange, Metastatic nodule, Cancer en Cuirasse

DIRECT

- Skin, pectoral Fascia, Pectoralis major, Serratus anterior, Chest wall

BLOOD

- Bone secondaries→OSTEOLYTIC LESIONS in **AXIAL SKELETON→LUMBAR VERTEBRAE**

.. Through valveless communication between Posterior Intercostal Veins & Paravertebral venous plexus ..

N.B. In Prostatic cancer → Bone secondaries are Osteogenic lesions

TRANSCEOLOMIC ..Retrograde lymphatic permeation..

- OVARIES→ Krukenberg's tumor
- NODULES IN DOUGLAS POUCH→ Plummer's shelf nodules
- PERITONEUM→ Malignant ascitis

CANCER BREAST SPREADS BY BLOOD SPREAS→ DISTANT MICROMETASTASIS

STAGING "UICC"



STAGE I		T ₁ , N ₀ , M ₀	EARLY CANCER BREAST
STAGE II	IIA	T ₂ , N ₁ , M ₀	
	IIB	T ₃ , N ₀ , M ₀	
STAGE III	IIIA	T ₁₋₃ , N ₀₋₂ , M ₀	LOCALLY ADVANCED BREAST CANCER
	IIIB	T ₄ , any N, M ₀	
STAGE IV		Any T, any N, M ₁	METASTATIC

CLINICAL PICTURE OF BREAST CANCER

**FEMALE, 50-60 YEARS WITH PAINLESS SWELLING
IN UPPER LATERAL QUADRANT OF BREAST**

SYMPTOMS

PAINLESS BREAST LUMP

(Discovered by routine screening)

DISCHARGE:

Watery, Blood stained, pasty discharge

OCCULT PRESENTATION:

- BONE → Bone ache, pathological fracture
- Lung → Dry cough, hemoptysis, dyspnea
- Liver → Malignant jaundice
- Axillary lump

PAINFULL BREAST CANCER:

- LATE STAGE
- MASTITIS CARCINOMATOSIS
- PAGET'S DISEASE OF NIPPLE

SIGNS

GENERAL:

CACHEXIA + SIGNS OF METASTASIS

(LNs: Troiser sign, BONE: Tender spine, LIVER: Jaundice, Hepatomegaly)

LOCAL:

EXAMINE BOTH BREASTS + AXILLA + SUPRACLAVICULAR LNs

INSPECTION..

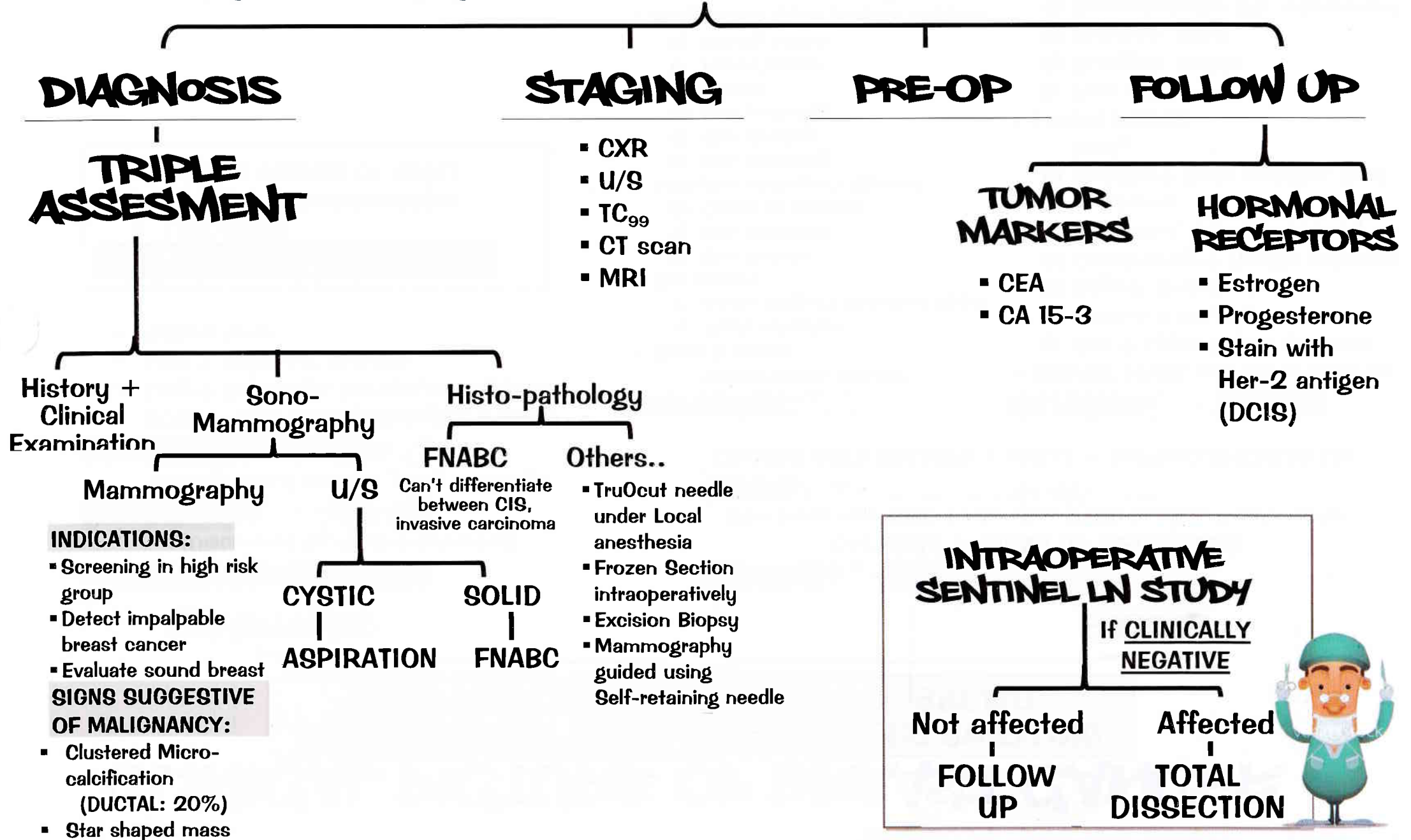
"ASYMETRICAL BREAST"

- Nipple & Areola:
 - 1) Nipple retraction
 - 2) Areola → Paget's disease of Nipple
- Skin proper:
 - 1) Skin Nodules
 - 2) Skin Ulceration
 - 3) Cancer en cuirasse
- Infiltration of Cooper's ligament
 - 1) Skin teething
 - 2) Skin dimpling
 - 3) Skin puckering
- Lymphedema:
 - 1) Peau d'orange
 - 2) Brawny edema
- Metastasis: → Sister Joseph's Nodules

PALPATION:

- **BREAST MASS..** Start with the normal site
 - 1) Site → Upper lateral quadrant
 - 2) surface → irregular
 - 3) Edge → Ill-defined
 - 4) Consistency → Hard in schirrous carcinoma, soft in Medullary carcinoma
 - 5) Mobility → Early mobility, fixed lately.
- **LYMPH NODES:**
 - 1) Free axilla
 - 2) Enlarged, Mobile
 - 3) Enlarged, Fixed
 - 4) Supraclavicular LNs enlargement

INVESTIGATIONS OF BREAST CANCER



TREATMENT OF BREAST CANCER

EARLY

STAGE I, II

- Cancer breast is a systemic disease
- Aim is to CURE my patient
- Once it is evident → It metastasizes in the form of MICROMETASTASIS
- TTT → LOCAL + SYSTEMIC TTT.



INTERMEDIATE

STAGE III

**SURGICAL TREATMENT
SANDWITCHED BETWEEN
CHEMOTHERAPY**



- Neo-adjuvant Chemotherapy is given → For DOWNSTAGING of Tumor (From Stage III → II)
- Surgery is decided according to response to Chemotherapy → MRM OR LUMPECTOMY

LATE

STAGE IV

- HORMONAL THERAPY
 - Hormonal receptors +ve
 - Bone Metastasis
- CHEMOTHERAPY
- TTT. OF COMPLICATIONS

Hypercalcemia	IV fluids, Bisphosphonates
Bone pain	Radiotherapy
Fractures	ORIF
SVC obstruction	Radiotherapy
Cerebral metastasis	CS
Spinal cord compression	Decompression
Pleural effusion	IC tube under water seal
Lymphedema	Decongestive therapy
Liver metastasis	Chemotherapy

LOCAL

MRM

Modified Radical Mastectomy

- Removal of breast lump
- Removal of Breast tissue
- Block dissection of axilla
- Reconstruction of breast with Myo-cutaneous flap or prosthesis " silicon"



LUMPECTOMY

- Removal of breast lump
- Post-operative Radiotherapy 5000 RAD
- Local control of Axilla:
 - Clinically +ve → Block dissection
 - Clinically -ve Sentinel LN Biopsy

SYSTEMIC

CHEMO-THERAPY

CMF, ADRIAMYCIN

- Cyclophosphamide
- Methotrexate
- 5-Fluorouracil

HORMONAL-THERAPY

- Female > 70 years
- Free axilla
- Hormonal receptors +ve



صباح لو
جالفا
سرطان
ثدى !!

POST-OPERATIVE RADIOOTHERAPY AFTER MRM:

- If HIGH Grade tumor Give 1500 RAD
- If ALL LNs are POSITIVE
- In MEDIAL TUMORS Internal mammary LNs affection

QUART

- Quadrantenectomy
- Axilla Clearance
- Radiotherapy

CONTRAINDICATIONS OF CONSERVATIVE SURGERY

TUMORS

- ✓ Bilateral ... Multi-focal
- ✓ Paget's dis. ... Central tumors
- ✓ Tumor > 4cm
- ✓ High grade (III) ... Fixed to Ms... Distant metastasis
- ✓ CIS > 20 %

PATIENT

- ✓ Pregnant
- ✓ Preference
- ✓ Previous irradiation
- ✓ Contraindicated

Breast

- ✓ Small

FOLLOW UP:

كل قد ايه ؟

- ✓ In first 2 years → Every 3 months
- ✓ Next 2 years → every 4 months
- ✓ Yearly for life → mammography of the other breast

هتتابع ايه ؟

- ✓ Complications of operations
- ✓ Local recurrence
- ✓ Distant metastasis
- ✓ Carcinoma of other breast

PAGET' S DISEASE OF NIPPLE AND AREOLA

ETIOLOGY:

- Intra-ductal carcinoma
- Retrograde lymphatic spread from schirrous carcinoma

- ✓ Middle aged female
- ✓ Elderly female
- ست كبيرة مبترضعش

ECZEMA

Resistant to usual TTT of eczema

- **Unilateral ..**
- In nipple → Erosion
- NO itching
- NO oozing
- NO vesicles
- Well defined lesion
- Breast lump

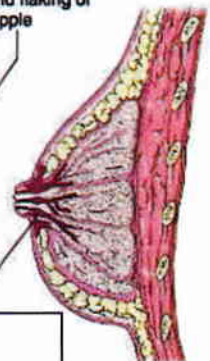
Treatment:

Modified radical mastectomy

RADIO-RESISTANT



Redness, scaling and flaking of nipple



INVESTIGATIONS

Biopsy & Histopathology

Microscopic picture:

- **PAGET CELLS ... (large vacuolated cells, deeply stained nuclei)**
- Epithelial hyperplasia, Lymphocytic infiltration

BREAST C. IN PREG.**MRM + CHEMOTHERAPY
AFTER 1ST TRIMESTER**

- # Radiotherapy
- # Chemotherapy in 1st trimester
- # Hormonal therapy
(-ve hormonal receptors)

**CANCER BREAST IN MALE**

❖ Risk factors :

- 1) Prostatic cancer
- 2) BRCA 2 mutation

❖ AGGRESSIVE → (Blood borne metastasis)

❖ Hormonal positive

❖ Treatment → CASTRATION, MRM

**BREAST
SARCOMA****ETIOLOGY:**

- DE-novo or on top of soft fibroadenoma

CLINICAL PICTURE:

- Female : 30-40 years
- Fleshy tumor.. Large breast mass.
- Spread mainly by Blood..(LNs spread is rare & late)

INVESTIGATIONS:

- Triple assesment → **NO MICRO CALCIFICATIONS**

TREATMENT :

Simple mastectomy + Radiotherapy

GYNecomastia

❖ DEFINITION:

Painless Enlargement of MALE breast due to

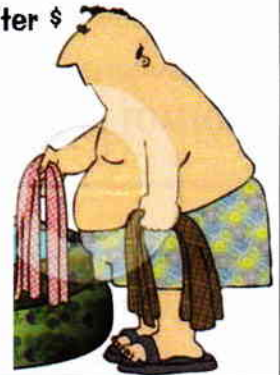
↑Glandular element.. (# LIPOSMASTIA)

❖ Etiology :

- a) Commonest cause is **IDIOPATHIC**
- b) ↓metabolism of estrogen, LCF
- c) Genetic → Klinefelter \$

❖ Treatment :

- 1) SC mastectomy
- 2) Suction lipectomy
- 3) Endoscopic surgery

**MAMMARY DUCT ECTASIA
(PERI-DUCTAL MASTITIS)**❖ DEFINITION: Dilated **INFLAMMED** major milk ducts❖ ETIOLOGY: Anaerobic periductal infection, with a strong association with **SMOKING**❖ PATHOLOGY: dilatation of **MAJOR** milk ducts, **PLASMA CELL INFILTRATION**

❖ IT's NOT A PRECANCEROUS CONDITION

❖ CLINICAL PICTURE: Female, middle aged, smoker presented by :

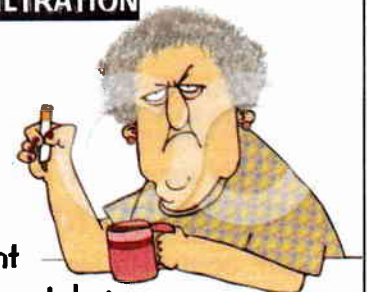
- 1) NIPPLE DISCHARGE ... creamy, serous, blood stained
- 2) SUBAREOLAR PAINLESS SWELLING

❖ INVESTIGATIONS:

- 1) If Pt. presented with sub-areolar mass → Triple assessment
- 2) If Pt. is presented with Nipple discharge → Benzidine test, cytology

❖ TREATMENT:

- 1) Early → Combination of antibiotics
- 2) IF PERSISTANT → **MAJOR DUCT EXCISION THROUGH CIRUMAREOLAR INCISION**
..(HADFIELD OPERATION)..



BREAST TWEETS!!



TWEET
we Gebna!!

MOST COMMON ...

- 1) Reason for referral to breast clinic → **Cyclic mastalgia**
- 2) **Duct ectasia** → more common in smokers
- 3) Cause of Blood stained discharge → **DUCT PAPILOMA**
- 4) Cause of Green discharge
 - Ductal changes
 - Retention cysts of **Fibroadenosis** → **Cyst of Bloodgood**
- 5) Cause of Serosanguinous discharge → **INTRADUCTAL papilloma**
- 6) Site of breast cancer → **Upper lateral quadrant (60%)**
- 7) Histological type of breast cancer → **Infiltrating duct carcinoma**
- 8) Cause of bilateral breast cancer → **Lobular carcinoma**
- 9) Secondary deposit in carcinoma of breast → **BONE:LUMBAR VERTEBRAE**
- 10) MOT of breast abscess → along **NATURAL passages** (Nipples)



MRI breast imaging:

- Distinguishes scar from recurrence
 - Imaging of breast implants
- Management of axilla in breast cancer & recurrent disease

CONGENITAL NIPPLE RETRACTION .. Simple nipple inversion:

- Occurs at puberty.
- Unknown etiology.
- Bilateral in 25%.
- May cause problems during lactation.

POLYMASTIA

- Accessory breast.
- Usually bilateral.
- Without nipple.
- May occur below pectoral region in groin or even in thigh but with nipple.

MACROMAZIA

Mild cases can be treated by anti-estrogen.

TRAUMATIC FAT NECROSIS

- Can occur via blunt trauma or even indirect violence i.e. vigorous contraction of pectoral muscle.
- Granuloma formation with marked fibrosis.
- No LN enlargement in axilla.
- Mammography is not conclusive as it gives features similar to those of cancer.

INFLAMMATION OF BREAST

- 1) Acute breast abscess.
- 2) Chronic breast abscess
- 3) T.B.
- 4) **MONDOR'S DISEASE**... Obscure type of thrombophlebitis affecting veins of the breast
- 5) Mammary duct ectasia.

☒ Sites of breast abscess:

- Pre-mammary → on top of infected sebaceous cyst.
- Retro-mammary → deep to pectoral fascia on top of infected hematoma.
- Intra-mammary → inside breast during lactation: can occur at any part of the breast.

-In stage of milk engorgement: Dull aching pain referred to shoulder with persistent fever and attacks of shivering.

-In stage of acute abscess there is pitting edema.

☒ CHRONIC BREAST ABSCESS:

- C/O → painless breast lump and sometimes dull aching pain with no systemic symptoms
- O/E → the swelling is irregular.
- TREATMENT → Excision under general anesthesia.

☒ TB OF BREAST → usually occurs with pulmonary TB.**FIBROADENOMA**

- Benign simple fibroadenoma is less than 3 cm.
- Giant fibroadenoma more than 5 cm.
- **PHYLLOIDES TUMOR** → occurs usually in perimenopausal women in 30-50 age groups.

BREAST CANCER**☒ FNABC → can't differentiate between CIS, Infiltrative cancer (WIDE BORE CANNULA)****☒ TUBULAR CARCINOMA**

It is a rare but a well diff. cancer. It is small in size being about 1 cm in diameter hard and one section has radial appearance. Histologically it forms tubular structures formed of single layer of epithelium. It spread by lymphocytes and it has very good prognosis.

☒ PAPILLARY CARCINOMA.. INTRACYSTIC PAPILLARY CARCINOMA

Rare type that is difficult to distinguish from benign intraductal papillomatosis.

Well circumscribed and histologically demonstrate papillary formation it presents by bleeding per nipple and it is of good prognosis.

- Inflammatory carcinoma can occur in all age groups.
- Invasive lobular cancer indistinguishable from invasive duct carcinoma.
- The second line Hormonal therapy used when Tamoxifen responders relapse → Synthetic progesterone .. "Medroxy progesterone acetate (provera)".
- Chemotherapy is the treatment of choice for metastasis

☒ Side effects of Radiotherapy :

- Local burn
- Pulmonary fibrosis
- End arteritis

☒ Axillary surgery in breast carcinoma

- Axillary LNs metastasis is the best marker for prognosis
- Treatment of axillary lymph nodes positively influences survival
- NO RADIOTHERAPY is applied if axillary clearance is performed

☒ Lymph obstruction of advanced breast cancer :

- Peau d'orange
- Skin nodule
- Cancer en cuirasse → (skin nodule + lymphedema of breast skin)
- Edema of arm
- Lymph-angiosarcoma



- 1- female in child bearing period presented with a mass better felt by tip of fingers not the flat of the hand , pain and swelling are related to the cycle ,Axillary LNs are enlarged, elastic, tender, mobile

Fibrocystic disease

- 2- Young Female 20 years, presents with well circumscribed painless mass, Firm in consistency, freely mobile, Axilla is Free

Fibro adenoma

- 3-female 40 years old presented with bleeding per nipple on zonal pressure

Intra-ductal papilloma.

- 4-old female presented with painless mass in the upper lateral quadrant of the breast

Cancer breast.

- 5-Mostly old female presents with unilateral eczema like around areola (or discoloration), not itchy and not respond to medical TTT

Paget disease.

- 6-female 30,40 years old presented with large firm to soft palpable mass might reach Hugh size with NON- palpable axillary LNS and skin ulceration might occur

Cystosarcoma phylloid.

- 8-Lactating female presented with painful breast O/E inflammatory reaction presented in a Sector of the breast. Axillary LNs are enlarged, elastic,tender,mobile

Acute lactation mastitis (milk engorgement)

- 9-Lactating female presents with bad general condition, induration of the breast and Axillary LNs are Hard and Fixed

Mastitis carcinomatosis.

- 10-Lactating female presents with breast mass, hectic fever and throbbing pain

Acute breast abscess.

- 11-Female, middle aged, smoker presented with creamy breast discharge and painless swelling (mostly sub-areolar)

Duct ectasia

BREAST QUESTIONS

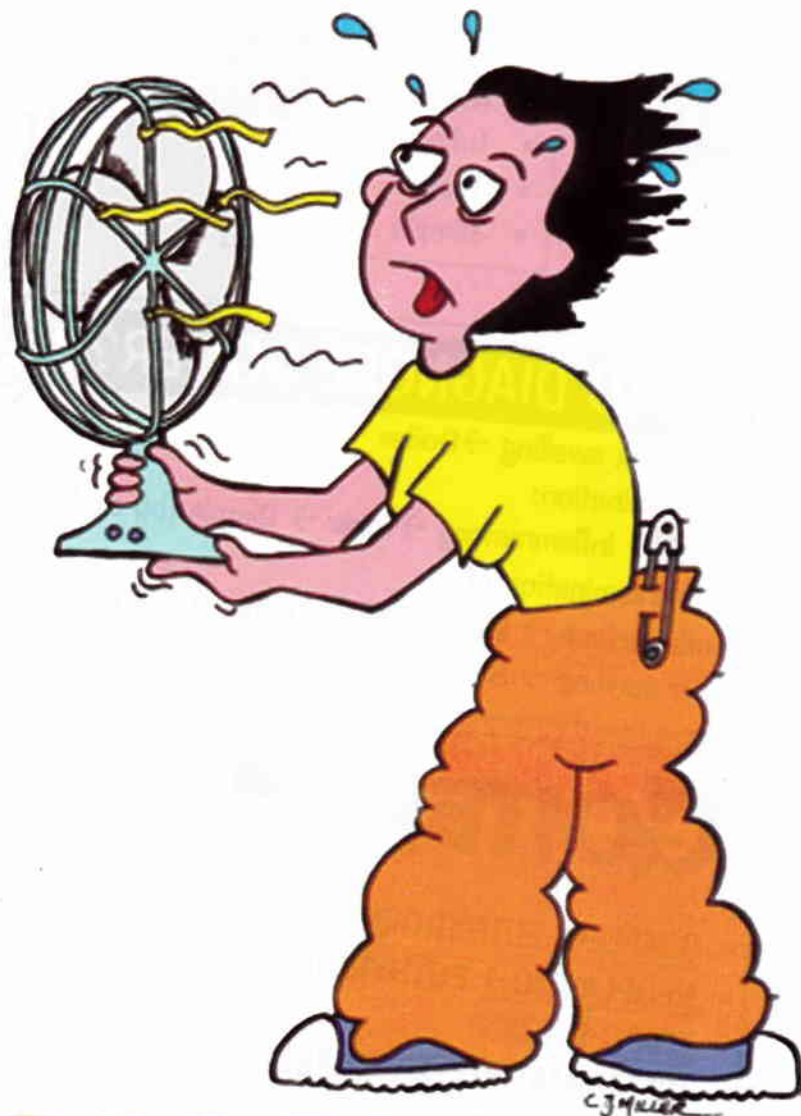


- Early detection of cancer breast
(Azhar F: 2007)
- Management of Acute breast abscess
(Azhar F: 2007)
- Discuss Treatment of Milk engorgement
(Azhar F: 2006)
- Causes of chronic breast mass
(Azhar F: 2001)
- Breast abscess
(Azhar F: 2004 - Azhar M: 2006 - Ain shams: 2004)
- Nipple discharge
(Azhar F: 2003)
- Breast mass: Investigation
(Azhar F: 2009)
- Cancer Breast : diagnosis & ttt
(Ain shams:2005)
- Management of early cancer breast
(Azhar M: 2012, 2011 - Kasr: 2008)
- Pathology of cancer breast
(Azhar M: 2003)
- Fibro-adenosis :etiology , C/P & pathology
(Ain shams: 2000)

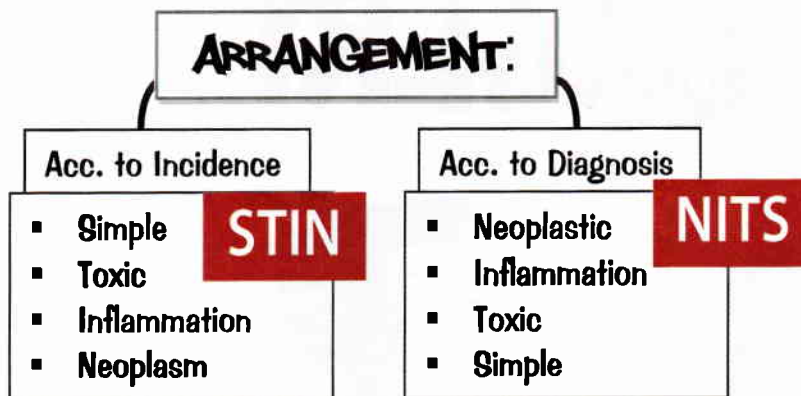
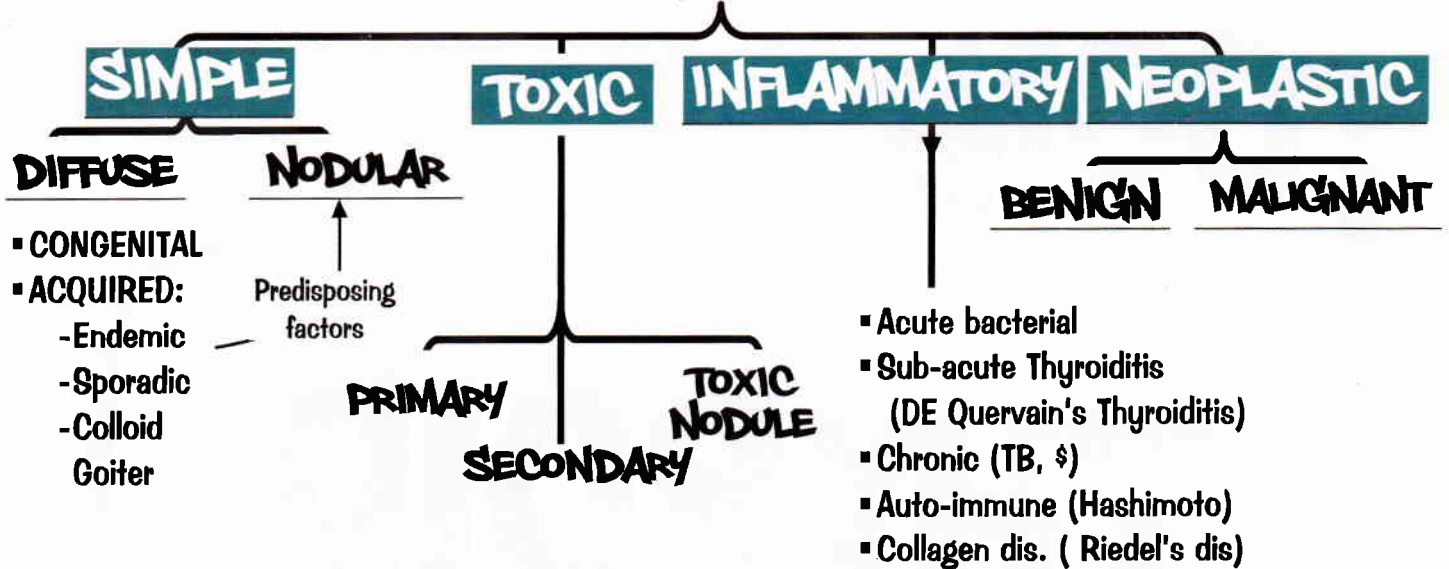


SURGI-TOONS

THYROID SURGERY



ENLARGED THYROID: GOITER

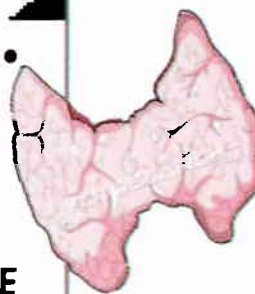


HOW TO DIAGNOSE GOITER??

- 1) Female with neck swelling → Goiter
- 2) History & Examination:
 - Neoplastic → inflammatory → Toxic → Simple (by exclusion)
- 3) If Simple → Examination of :
 - Smooth surface → Simple Diffuse Goiter → TTT is medical
 - Nodular surface → Simple nodular Goiter → TTT is Surgery

GOITER ..

- SIMPLE → EUTHYROID
- NEOPLASTIC → EUTHYROID
- TOXIC → TOXIC
- INFLAMMATORY → VARIABLE (HYPER then HYPO)



SIMPLE GOITER

The patient
is Euthyroid

	DIFFUSE GOITER	NODULAR GOITER
Patient	Female , 20 years	Female, 30-40 years
Etiology	▪ <u>Endemic</u> → Absolute ↓ Iodine بنت من الواحات ▪ <u>Physiological</u> → Relative ↓ Iodine At puberty, pregnancy, lactation (VENUS NECK) ▪ <u>Sporadic</u> → PASA, anti-thyroid drugs	Repeated episodes of Stress (Stress → Hge → Necrosis → nodule) NODULES ARE INACTIVE + ACTIVE INTER-NODULAR TISSUE ..
C/O	Painless Mild enlargement of the Gland	▪ Nodular swelling in the neck → cosmetic disfigurement ▪ Pressure manifestations, O/E:
Gland	▪ Mild Enlargement ▪ DIFFUSE .. ▪ Smooth, Symmetrical ▪ Mobile, Not tender ▪ No other manifestations 	▪ Enlarged ▪ Nodular... ▪ Firm, Asymmetrical ▪ Moves with deglutition ▪ No toxic manifestations O/E: ☒ Displacement of trachea ☒ Tracheo-malacia (Kocker's test) ☒ Carotid artery pulse (Berry test)
Diagnosis	Same Investigations as Nodular Goiter, but.. - U/S → Diffuse Goiter - NO FNABC	1) Function → NORMAL T3, T4, TSH 2) Morphology → U/S → Multinodular goiter 3) Morphology and function : Thyroid scan → COLD NODULE WITH WARM INTERNODULAR TISSUE.. 4) Exclusion of : ▪ Malignancy → FNABC ▪ RSG → Thyroid scan , Plain X-ray
Treatment	Main line is MEDICAL: "L-THYROXIN" 0.2 mg/d for several months then tapered to 0.1 mg/d for years Diffuse Goiter is predisposing to SNG	Main line is SURGICAL ▪ Total thyroidectomy with Post-op replacement therapy (L-thyroxin 0.1-0.2 mg/d) + Histopathological sample ▪ If small sized in a young Pt. → Medical thyroidectomy ▪ TTT. of Complications

COMPLICATIONS OF SNG

- ☒ 2ry thyrotoxicosis (autonomous internodular tissue .. 25%)
- ☒ Malignancy (**FOLLICULAR CARCINOMA**)
- ☒ Pressure on trachea → Postural dyspnea
- ☒ Hge , Infection, Cystic degeneration, Calcification
- ☒ Retro-sternal extension.

Surgery techniques:

- Partial thyroidectomy
- Subtotal thyroidectomy
- Total thyroidectomy (To avoid recurrence)
- Dunhill operation

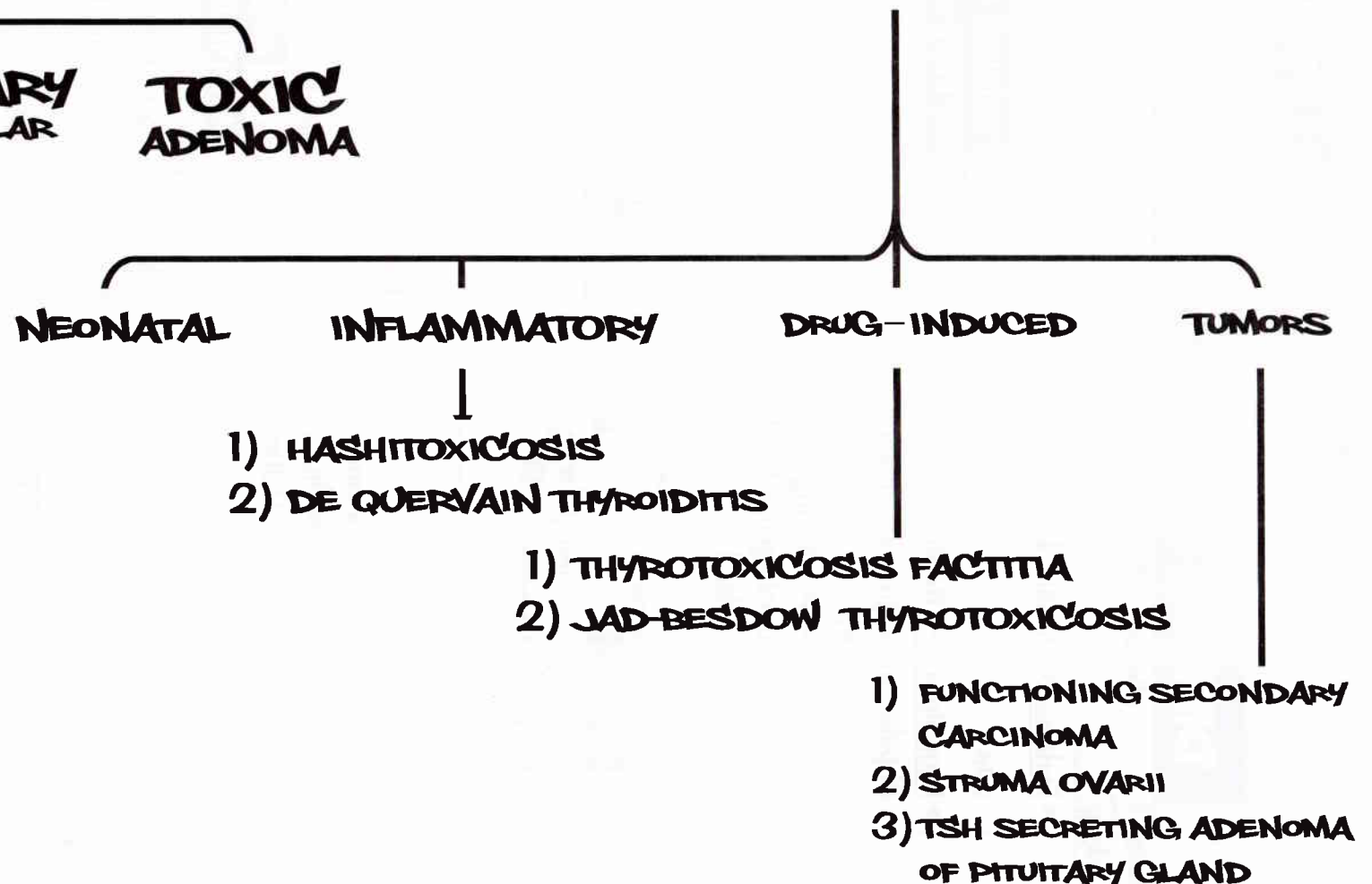
THYROTOXICOSIS

- HYPERTHYROIDISM.. $\uparrow$ Thyroxin due to thyroid gland hyperactivity
- THYROTOXICOSIS.. $\uparrow$ Thyroxin due to Thyroid gland, drug induced, ectopic hormone production.. etc

COMMON CAUSES



RARE CAUSES



THYROTOXICOSIS

1ry THYROTOXICOSIS (GRAVE'S DISEASE) (Diffuse Toxic Goiter)		2ry THYROTOXICOSIS (PLUMMER'S DISEASE) (Toxic Nodular Goiter)	TOXIC NODULE (Toxic Adenoma)
ETIOLOGY:			
	Auto-immune..("TSA") Type V Hypersensitivity On top of Normal Gland	↑sec. from INTERNODULAR TISSUE On top of long standing SNG	↑ sec. from HYPERACTIVE ADENOMA
O, C, D	▪ Sudden Onset ▪ Remission & Exacerbation	▪ Gradual onset ▪ Slowly progressive	
CLINICAL PICTURE:			
Type of patient	Young Female 20-30 years subjected to Trauma, pregnancy, lactation	Female >40 years Past History of thyroid swelling	Female at ANY age
C/O: "SEE LATER"	▪ Toxic symptoms ▪ Autoimmune manifestations	▪ Toxic symptoms ▪ NO Autoimmune manifestations	
Dominant manifestations	CNS manifestations	CVS manifestations	▪ Young Pt. → CNS ▪ Old Pt. → CVS
O/E: "GLAND"	▪ Diffuse symmetrical Enlargement. ▪ Firm, well defined edge ▪ Non tender , Freely mobile ▪ Thrill	▪ Nodular Asymetrical Enlargement ▪ Firm ▪ NO Thrill or pulsations	ONLY ONE PALPABLE NODULE IS FELT
INVESTIGATIONS:			
Laboratory	↑T3,T4 + ↓TSH		
	▪ +ve antibodies (TSA)	▪ - ve Antibodies	▪ - ve Antibodies
U/S :	Mild diffuse enlargement	Multiple Nodules	Solitary Nodule
Thyroid scan :	Hot Gland (Diffuse ↑ Uptake)	Cold Nodules (OVER-active internodular tissue)	Hot Nodule (Low uptake of surrounding tissues)
TREATMENT:			
	MEDICAL waiting for spontaneous remission 1) Neomercazole (10 mg x 3 /d) 2) Inderal (80-160mg/d) 3) Valium (5-15 mg/d) N.B. IF MEDICAL TTT FAILED: ▪ <45 Years & Large → Surgery ▪ >45 years → ¹³¹ I	Main Line is SURGICAL Subtotal Thyroidectomy after Preparation If High risk Pt. (Heart failure) → ¹³¹ I :: Medical TTT is used ONLY for PREPARATION (Lugol's iodine 2 weeks before surgery)	If Pt. < 45 Years: Ipsilateral Total Lobectomy after preparation (Hemi-thyroidectomy) If Pt. > 45 years RADIOACTIVE IODINE (Target therapy)

No role for FNABC → As incidence of malignancy in a toxic goiter is extremely rare

CLINICAL PICTURE OF GRAVE'S DISEASE

TOXIC MANIFESTATIONS

EYE:

Exophthalmos بنحسى إن عينك طالعك ليه؟؟
 Diplopia بنشوفى الحيد إثنين؟ بنشوفى على السلم؟

SKIN:

Sweaty, warm جلدك دافى و عرفان؟
 SCT edema ورم تحت الجلد

MUSCLES:

Myopathy شغل الببت بعمليه زى الأول و لا فى تخيم؟

METABOLIC:

Heat intolerance طبعك اللبس و الإحساس بالحرارة
 Thyroid paradox بنأكل كثر و بنحسى؟

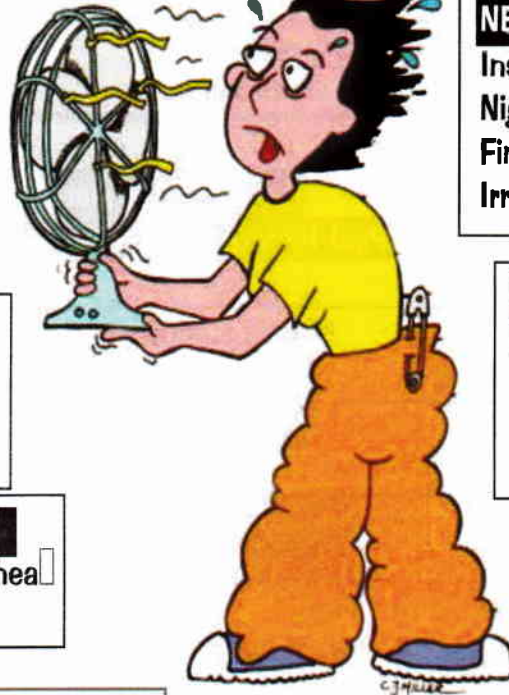
Diff. from Psycho-neurosis

GIT, URINARY:

Diarrhea (Hyper defecation) متعود نخس كام مرة؟؟ هل فى زيادة؟
 Polyuria هل فى زيادة فى التبول؟

GENITAL:

Menorrhagia → amenorrhea
 عندك مشاكل فى الدورة؟



NERVOUS:

متعوده ننامى قد إيه؟ هل حصل تخيم؟
 Night mares بيحلمك كوايس كثر؟
 Fine tremors عندك رعشة فى إيديكى؟
 Irritability بغنى عصبية اليومين و خنافك كثر

Achilles reflex is shortened

CARDIAC:

Palpitation عندك زفرقة فى قلبك؟ منتظمة و لا ملخبطة؟
 ↑COP HF رجلك ورم و جالك كرشك نفس قبل كره؟

BONE:

Osteoporosis نشر فى العظم؟

"EYE SIGNS"

- Is it true or false?
- Nafziger test, Ruler test
- ☒ Darlymph's sign
 (Rim of sclera)
- ☒ Stellwag's sign
 (Infrequent blinking, tremors)
- ☒ Joffroy's sign
 Lack of wrinkling on looking upwards
- ☒ Von Gravie's sign
 Lid Lag
- ☒ Rosenbach's sign
 Fine tremors on gentle closure
- ☒ Mobius Sign
 Failure of convergence

VITAL DATA:

- PULSE: (Tachycardia, Water Hummer pulse, may be irregular)
- BLOOD PRESSURE: ↑Systolic, ↓Diastolic
- TEMPERATURE: ↑in Thyrotoxic Crises

AUTO-IMMUNE MANIFESTATIONS:

- ABDOMEN → HSM
- UPPER LIMB: → Acropacy (Clubbing)
- LOWER LIMB → Pretibial myxedema

COMPLEXION

- JAUNDICE → Anti-thyroid drugs, Liver metastasis
- PALLOR → Malignancy
- CYANOSIS → RSG

TREATMENT OF THYROTOXICOSIS

OF GRAVE'S DISEASE

MEDICAL

INDICATIONS:

- ✓ 1ry thyrotoxicosis (<45 years)
- ✓ Pre-operative preparation in 2ry thyrotoxicosis, Toxic Nodule

Neomercazole + Inderal

- ✓ When Pt. is Hyperthyroid:
Neomercazole 10 mg tds
+ Propranolol "Inderal" 80-160 mg/day (Cardio-protective)
- ✓ When Pt. is Euthyroid
Give neomercazole
5mg x3/day for 1 year

N.B.

- ✓ Diazepam may be added in severe CNS affection
- ✓ Follow up → Serial TSA measurement.



RAPID PREPARATION:

Propranolol (Inderal) may be given without Neomercazole for 4 days especially in RSG & Continued for 1-2 weeks after surgery to avoid Post-operative Thyrotoxic crises

SURGICAL

INDICATIONS:

- ✓ 2ry Thyrotoxicosis
- ✓ Huge Goiter, Pressure manifestations, RSG
- ✓ Failure of medical TTT of 1ry thyrotoxicosis

Subtotal Thyroidectomy after Preparation

Preparation before surgery:

- 1) Thyroid function tests
- 2) Indirect Laryngoscopy
- 3) Neomercazole 10 mg tds + Propranolol (Inderal) until patient is Euthyroid
- 4) When Pt. is Euthyroid → Neomercazole 5mg tds till the evening prior to operation + Lugol's iodine for 2 weeks (↓ Vascularity)

Operation:

Subtotal Thyroidectomy

Post-Operative:

Propranolol for few days

IRRADIATION

INDICATIONS:

- ✓ 1ry thyrotoxicosis in Pt. >45 years after failure of medical TTT.
- ✓ High risk patients

Radioactive Iodine

" ¹³¹ I "

(Beta rays.. Destroys major part of gland without affecting the adjacent structures)

- ✓ 10 Milli curie
- ✓ Effect appears after 3 months

Indicators that Pt. is ready for surgery

- ✓ Symptomatic relief
- ✓ Weight gain
- ✓ Sleeping pulse
- ✓ Serum T3, T4

SPECIAL PROBLEMS

IN PREGNANCY

FIRST TRIMESTER:

- ✓ Propyl thiouracil 50mg x2/8 hrs. (It crosses Placenta to less extent)
- ✓ Add Propranolol (Inderal)

SECOND TRIMESTER:

- ✓ Surgery.. Subtotal thyroidectomy

THIRD TRIMESTER:

- ✓ Anti-thyroid drugs + L-Thyroxine (To avoid thyouracil transmitted goiter)

Radiotherapy

DURING LACTATION:

- ✓ Propyl thiouracil

IN CHILDREN

- ✓ Anti-thyroid drugs waiting for spontaneous remission
- ✓ # Radiotherapy
- ✓ Surgery may be done after puberty

TRUE EXOPHTHALMOS

THYROTOXICOSIS

- ✓ Anti-Thyroid drugs + L-Thyroxin
- ✓ If surgery is indicated → Subtotal Thyroidectomy is done after stationary Exophthalmos for 6 ms

EXOPHTHALMOS

- ✓ Position, Protection
- ✓ Diuretics
- ✓ Lateral Tarsorrhaphy
- ✓ Orbital De-roofing

RETRO-STERNAL GOITER

CONGENITAL

ACQUIRED

PLUNGING

- Rises with deglutition
- Descends again through thoracic goiter

INTRA-THORACIC

- Gland is present in chest
- Separated from main gland
- Arises from Ectopic thyroid tissue
- Takes blood supply from mediastinal vessels

"MEDIASTINAL GOITRE"

- Nodule present in Chest
- Connected to main gland by band of tissues
- Takes blood supply from Thyroid vessels

CLINICAL PICTURE

It May be simple, Toxic, or Malignant Goitre

TYPE OF PATIENT: Male with short neck, strong strap muscles (MEDIASTINAL TYPE)

C/O:

- May be asymptomatic
- History of cervical goiter which has disappeared
- Severe pressure manifestations :
 - 1) Trachea → Dyspnea
 - 2) Esophagus → Dysphagia
 - 3) RLN → Hoarseness of voice

Dysphagia with Thyroid:

- RSG
- Reidle's thyroiditis
- Malignancy
- Myopathy of striated ms. Of esophageous

O/E:

- INSPECTION → Engorgement of neck veins, dilated chest veins
- PALPATION → Lower border isn't palpable
- PERCUSSION → Dullness over manubrium-sterni
- SPECIAL SIGNS → **+ve PEMBERTON SIGN**

"Patient elevates arm above level of head → Facial plethora due to venous congestion "

INVESTIGATIONS

- **CT SCAN** is the investigation of choice
- Isotope scan
- Plain X-ray → shadow in superior mediastinum.....
- Flow Volume loop pulmonary function test

Shadow in superior mediastinum

- RSG
- Thymoma
- Lymphoma
- Aortic aneurysm
- LNS ++

TREATMENT:

- ✓ Ideal treatment → Subtotal thyroidectomy from Neck "piece meal"
- ✓ If toxic → Subtotal thyroidectomy after preparation with INDERAL only
- ✓ Avoid → Injury of RLN , Fragmentation if malignancy is suspected

THYROIDITIS

AUTOIMMUNE THYROIDITIS (HASHIMOTO DISEASE)

Autoimmune disease: Abs against Thyroglobulin
& Microsome → Destruction of Follicles

غدة كبيرة و
هرمون قليل

CLINICAL PIC.

FLUCTUANT COURSE

Middle aged Female C/O of manifestations of toxicity
(HASHITOXICOSIS) then Goitrous Myxedema

+ Other auto-immune
manifestations

- Hepatosplenomegaly
- Erythema Nodosum
- Pyoderma Gangrenosa

O/E: Gland is Large, Multi-nodular, Firm,
Asymmetrical, and Moves with deglutition

INVESTIGATIONS

FNABC

- **ASKANAZY** cells
→ ACIDOPHILIC
- Lymphocytic infiltration
(Features of Chronic Thyroiditis)

LAB

- ↓ Thyroid function (Myxedema)
- ↑ ESR
- Anti-Thyroglobulin Abs +ve
- Anti-microsomal Abs +ve

IMAGING

U/S
Multiple
nodules

THYROID SCAN
COLD Nodule

TREATMENT

- L-Thyroxine + Cortisone
- Surgery if Large, Malignant

OTHER TYPES

RIEDLE'S THYROIDITIS

↑↑ Fibrosis → **FROZEN NECK** ..

CLINICAL PIC.

- Hard Nodule
- Pr. manifestations

**SIMULATES
MALIGNANCY**

May be associated with:

- Retro-peritoneal fibrosis
- Mediastinal fibrosis
- Sclerosing Cholangitis

NOT PRESENT
If occurs on
top of
Hashimoto

O/E:

- Adherent & Sticky to Skin

TREATMENT

LAHEY's Operation
Isthmectomy

DE QUERVAIN'S (SUBACUTE)

Viral or Complication of Mumps

CLINICAL PIC.

- Pain in Gland, Knee, Liver
- Enlargement of Thyroid
- MICROSCOPIC
→ **GIANT CELLS**

STAGING

I	Acute toxicity
II	Euthyroid
III	Hypothyroidism
IV	Recovery

INVESTIGATIONS

- ↑ ESR
- Thyroid Antibodies → -ve
- Thyroid Scan → **COLD**

TREATMENT

PREDNISOLONE

THYROID MALIGNANCY

BENIGN

FOLLICULAR ADENOMA

Well-formed acini + askanazy Cells

CLINICAL PICTURE

SOLITARY THYROID NODULE

INVESTIGATIONS

- U/S → Solitary Nodule
- Thyroid Scan → COLD Nodule

:: FNABC ISN'T USEFUL ::

(Can't differentiate between follicular adenoma, Follicular carcinoma)

TREATMENT

- ☑ Hemi-Thyroidectomy
- ☑ Open biopsy & Paraffin section

MALIGNANT

PRIMARY

SECONDARY

ADENO-CARCINOMA

MEDULLARY CARCINOMA

DIFFERENTIATED

PAPILLARY, FOLLICULAR

UNDIFFERENTIATED

ANAPLASTIC



CLINICAL PICTURE

SYMPTOMS

- ☑ Rapidly growing swelling in lower part of front of Neck
- ☑ Early painless, Painful lately (referred to ear)
- ☑ Infiltrative manifestations
- ☑ Metastatic manifestations

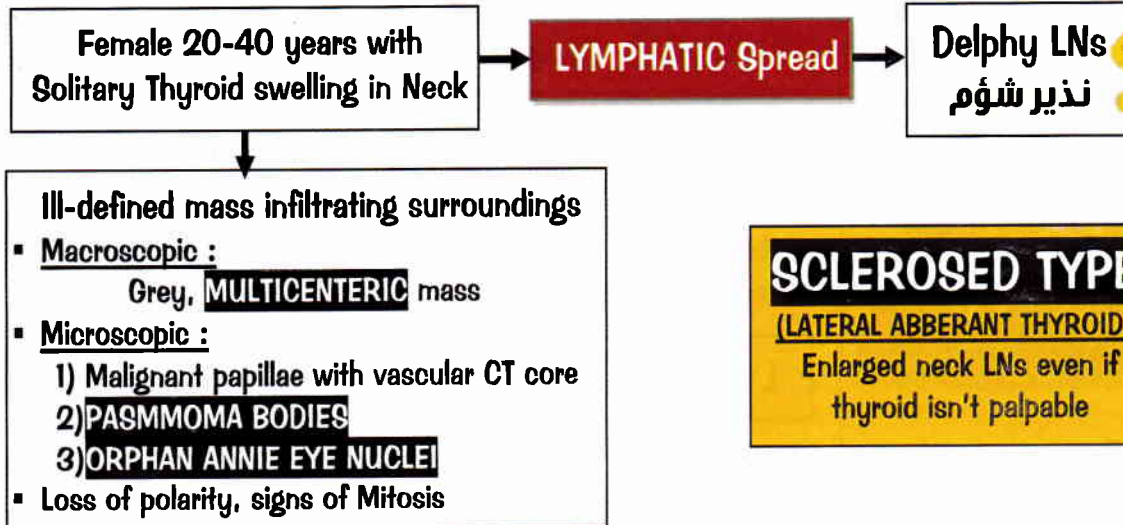
SIGNS:

- ☑ GENERAL → Cachexia, metastasis
- ☑ LOCAL SIGNS:
 - ☑ Hard gland, Early mobile & fixed lately
 - ☑ Trachea fixed to Gland, Positive Berry's sign
 - ☑ LNS++ (Delphian, Cervical LNs)

PAPILLARY CARCINOMA

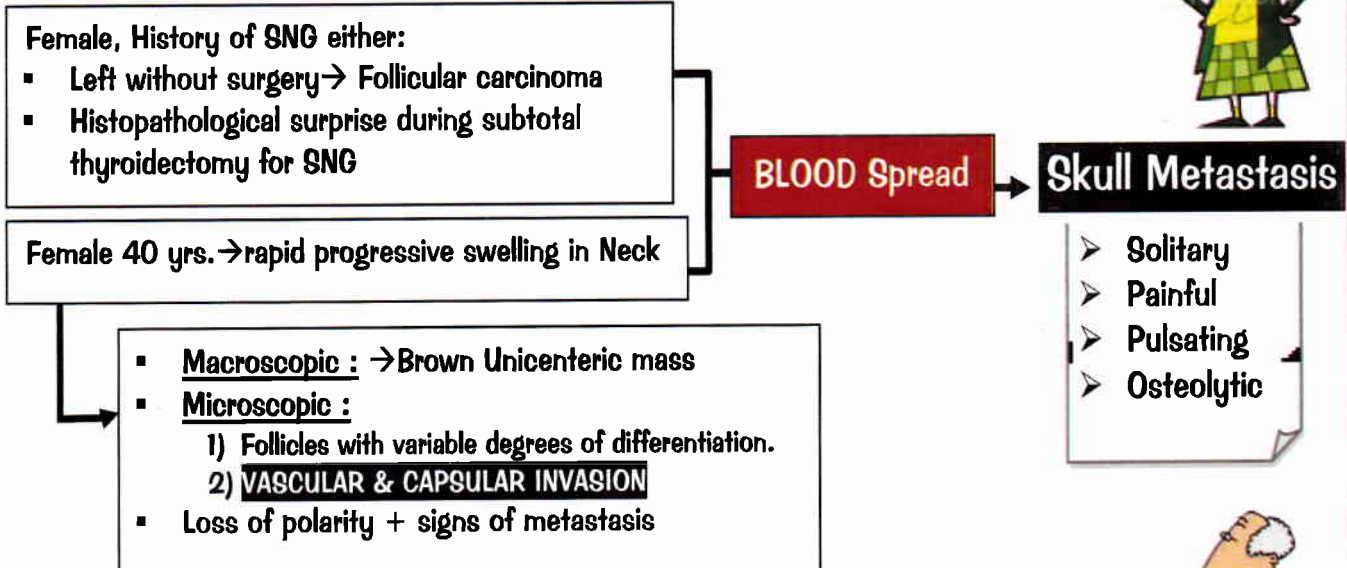
ETIOLOGY:

External radiation of Neck in children, Genetic factors (Goodwin's \$, Oncogens)



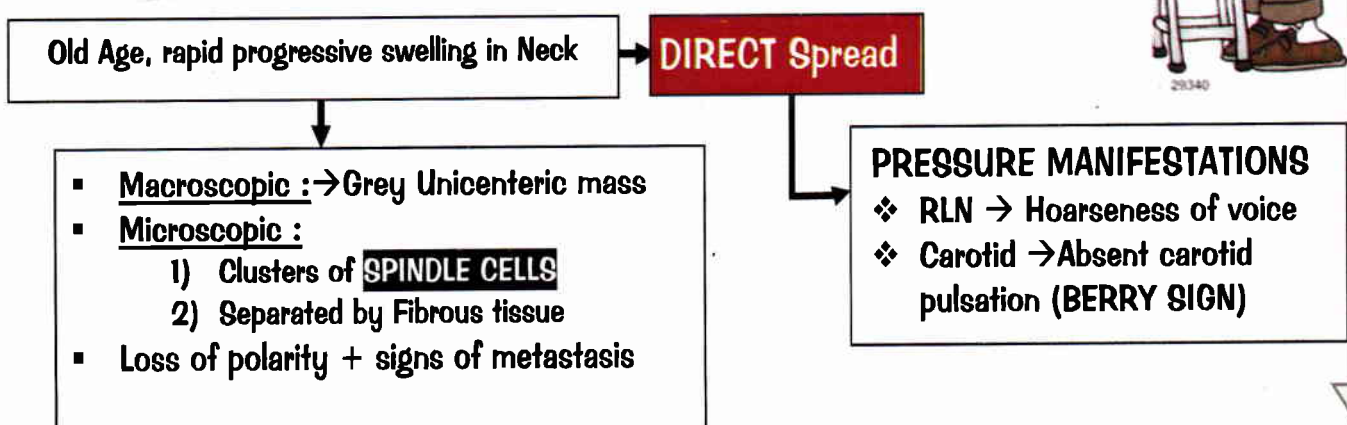
FOLLICULAR CARCINOMA

ETIOLOGY: SNG, Follicular adenoma, Histopathological surprise



ANAPLASTIC CARCINOMA

ETIOLOGY: Usually De-novo



↓ TSH Dependency → ↑ Rate of growth, ↓ prognosis, ↓ 10 years Survival

INVESTIGATIONS

DIAGNOSIS:

- Function→Thyroid function : NORMAL
- Morphology→ U/S
(Solitary Nodule,
Cyst with papillary projection)
- Morphology & function :
Isotope scanning →COLD Nodule
- FNABC
(In follicular→ Hemithyroidectomy & Paraffin)

STAGING:

- CT, MRI, U/S
- CXR , abdominal U/S
- Bone scan (done after Total Thyroidectomy)

PRE-OPERATIVE

Organ profile "CBC,KFT,LFT,ECG"

FOLLOW UP

- Tumor marker

Calcitonin	Medullary carcinoma
Thyroglobulin	Follicular carcinoma

- Positron emission tomography (PET)
.. To detect RECURRENCE ..

Follicular carcinoma
treated by thyroidectomy
+ Post-op ↑thyroglobulin Level

TREATMENT

DIFFERENTIATED

TUMOR & GLAND

- Total Thyroidectomy +
Central Nodal Dissection
- Post-Op L-Thyroxin
Replacement &
radioactive iodine

LYMPH NODES

- CHILD→ No Dissection
- ADULTS→ Prophylactic
Dissection of central group
of LNs
- If One LN is Affected→Block
Dissection of LNs of neck

There's NO LYMPHATIC SPREAD in
FOLLICULAR carcinoma→ NO LNS DISSECTION

RADIOACTIVE IODINE

- Destroy any remnants of normal thyroid tissue,
Ablate any metastasis of tumor
- **STEPS:**

Wait for manifestations of MYXEDEMA to appear..

- 1) Give small dose of Radioactive iodine
→ Total body scan
- 2) If there's +ve metastasis→ Large ablative
dose of Radioactive iodine
- 3) Post-therapy scan after few weeks

UNDIFFERENTIATED

IF INOPERABLE:

- Surgical debulking
- Palliative Tracheostomy
- Radio, Chemotherapy

"DOWN STAGING"

IF OPERABLE:

Total thyroidectomy + Post-
operative Radiotherapy &
Chemotherapy

FOLLOW UP .. 5 years post-operative..

- Every 3 months do the following :

- 1) Clinical examination
- 2) Thyroid scanning
- 3) Tumors markers

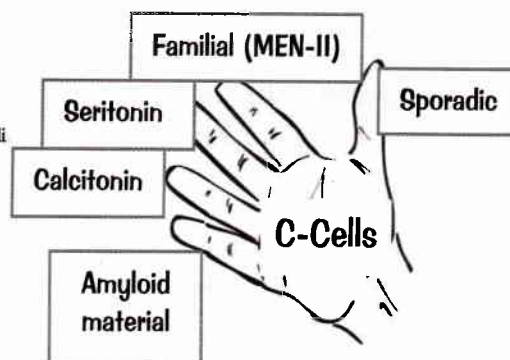
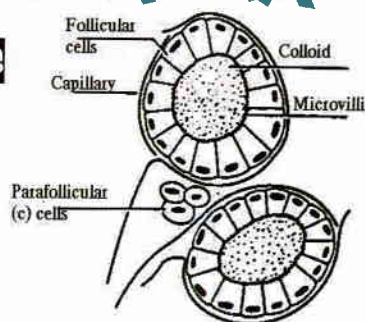
If patient with residual tumor after total
thyroidectomy→ Serum Thyroglobulin >2ng/ml

MEDULLARY CARCINOMA

Arises from : **PARA-FOLLICULAR CELLS**
That Secrete : **CALCITONIN**

ETIOLOGY:

- Sporadic → Fatal
- Familial → MEN II = SIPPLe's



CLINICAL PICTURE:

TYPE OF PATIENT: OLD Aged patient

SWELLING

- Rapidly progressive swelling in the lower part of front of neck
- PAIN: early painless, lately painful

CARCINOID SYNDROME

..Secretion of serotonin..

- Diarrhea
- Bronchospasm
- Flushing

INFILTRATIVE MANIFESTATIONS

- Dyspnea
- Dysphagia
- Hoarseness of voice,
- Horner syndrome

SIGNS:

- ☒ GENERAL → Cachexia, Metastasis
- ☒ LOCAL:
 - Early mobile thyroid swelling, lately fixed
 - NECK lymph nodes → Enlarged, Hard
 - Infiltrative → Trachea, Carotid sheath (+ve Berry's sign)



SPREAD:

- LYMPHATIC SPREAD → Mediastinal LNs
- BLOOD SPREAD → Liver, Skull nodules, ascitis

INVESTIGATIONS:

- SCREENING → Calcitonin, Calcium
- DIAGNOSIS → US/FNABC/Calcitonin (>0.08 ng/ml)
- STAGING → CT, CXR, U/S, Bone scan
- Pre-OPERATIVE → CBC, KFT, LFT, FBS
- EXCLUDE PHEOCHROMOCYTOMA →
URINARY CATECHOLAMINES, VMA

+ve Family History + ↑ Calcitonin
= **TOTAL THYROIDECTOMY**
even if Normal Gland

TREATMENT:

- Total thyroidectomy + Central Neck Nodal dissection
- SPORADIC CASES → All the Parathyroid is Preserved
- FAMILIAL CASES →
 - 1) Treat **PHEOCHROMOCYTOMA BEFORE THYROID**
(Combined Alpha & Beta Blockers → Adrenalectomy)
 - 2) Preserve ½ Parathyroid gland.. (for fear of hypo-parathyroidism)
- Treatment of Complications
- Post-operative Follow up every 3 months

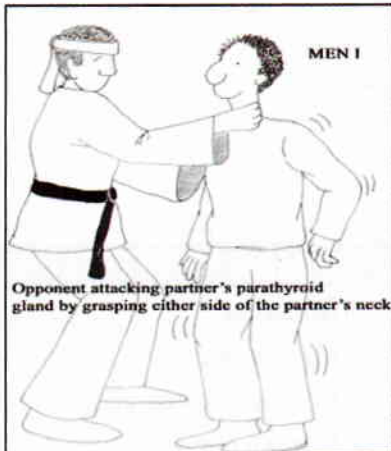
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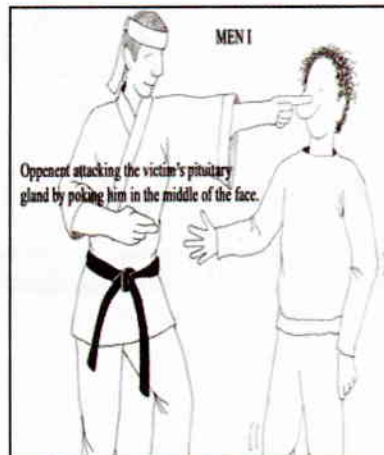
MULTIPLE ENDOCRINE NEOPLASIA

APUDoma → Tumor arising from APUD cells (utilize Enzyme Amine precursor uptake & precursor → VIP)

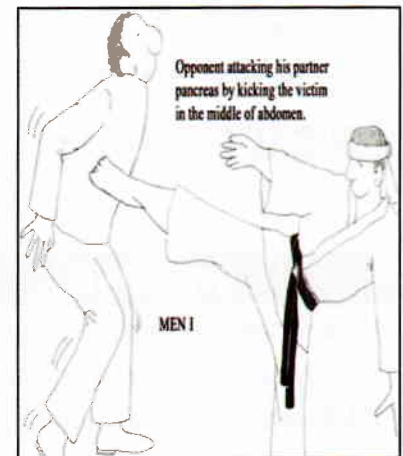
MEN - I



PARATHYROID ADENOMA

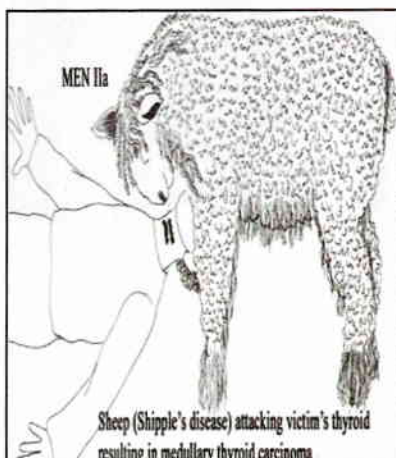


PITUITARY TUMOR

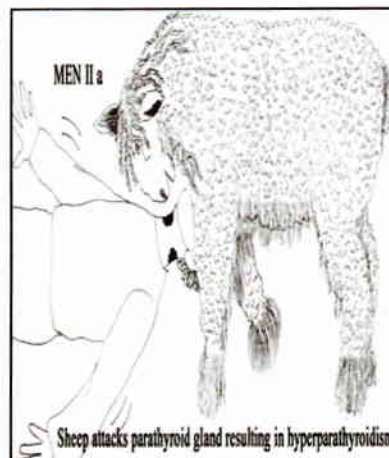


PANCREATIC TUMOR

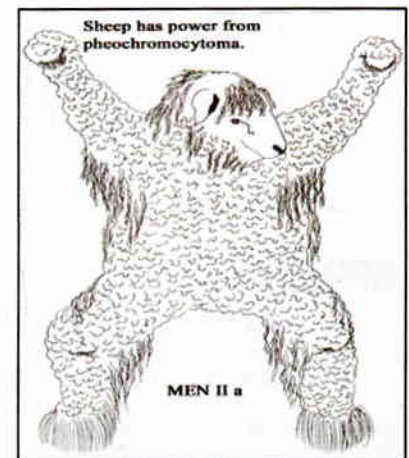
MEN - IIA



MEDULLARY CARCINOMA

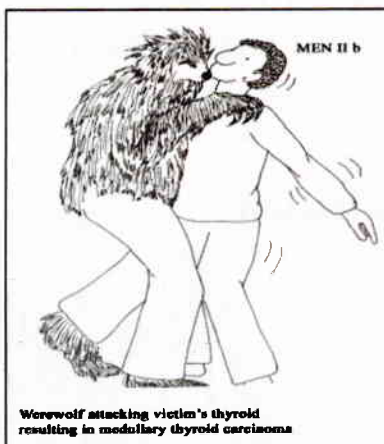


PARATHYROID ADENOMA

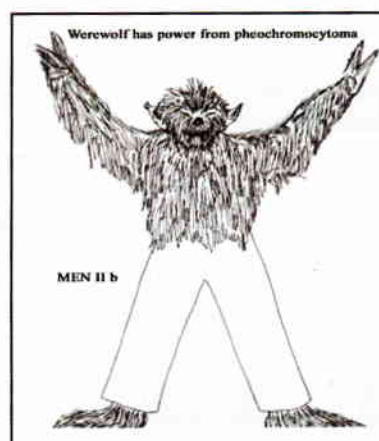


PHEOCHROMOCYTOMA

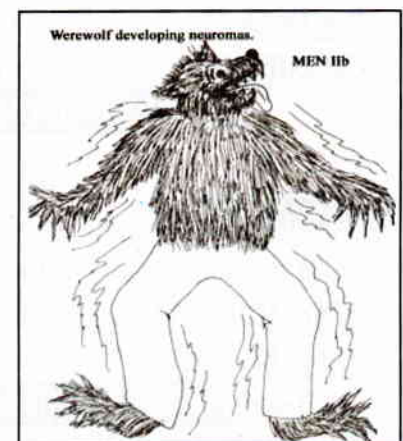
MEN - IIB



MEDULLARY CARCINOMA



PHEOCHROMOCYTOMA



NEUROFIBROMA +
HIRSHSPRUNG +
MARFANOID FEATURES

THYROID GLAND PHYSIOLOGY

- **TRAPPING** of inorganic iodide from Blood
- **OXIDATION** of iodide by peroxidase enzyme into Iodine
- **ORGANIFICATION** binding of iodine with tyrosine by Tyrosinase to form MONO- iodo tyrosine, DI-iodo tyrosine
- **COUPLING** of mono-iodo tyrosine to form T3, T4
→ unite with Thyroglobulin → Stored in Follicles



CONGENITAL DISEASES

- 1- **THE THYROGLOSSAL DUCT**: is related to central part of hyoid bone (moving of thyroglossal cyst up with tongue protrusion)
- 2- **THE THYROGLOSSAL CYST**:
 - May be present at any level of thyroglossal tract in the midline from foramen caecum to the suprasternal notch except in the region of the thyroid cartilage where the thyroglossal tract is pushed to one side
 - Treated surgically by removal of the tract with central part of hyoid bone (as infection is inevitable)
- 3- **THYROGLOSSAL FISTULA**:
 - Always acquired (following infection, inadequate removal of thyroglossal cyst)
 - It is lined by columnar Epithelium.
 - In long standing thyroglossal fistula, fistula is situated low down in the neck.
- 4- **PENDRED'S** \$: due to deficiency of peroxidase enzyme, in which the patient is deaf, mute, but NOT blind.
- 5- **LINGUAL THYROID**
 - May represent the only thyroid tissue.
 - Forms a rounded swelling at the foramen caecum, cause impairment of speech or respiratory obstruction.
 - It is best treated by full replacement with L-thyroxin or excision.
- 6- **MEDIAN ECTOPIC THYROID** → usually mistaken as thyroglossal cyst

SIMPLE GOITER

- 1- In simple goiter, the most important factor is dietary deficiency of iodine (The daily requirement 100-125 mg)
- 2- Vegetables of brassica family, PAS, Ca, thiocyanate, Carbimazole and thiouracil are goitrogenics.
- 3- In diffuse hyperplastic goiter → thyroid hormones level are normal (euthyroid).
- 4- A colloid goiter is late stage of diffuse hyperplasia.
- 5- **MUTINODULAR GOITER**
 - Only macroscopic nodule is found.. (Microscopic changes will be present throughout the gland and may be one form of a clinically solitary nodule.
 - Nodule may be colloid or cellular, and cystic degeneration and hemorrhage are common
- 6- Regarding thyroid function tests, no single test is conclusive & If TSH is normal → T3, T4 aren't needed.
- 7- Regarding FNABC:
 - The investigation of choice in discrete thyroid swelling, Simple & quick, with excellent patient compliance
 - Cannot differentiate Between Follicular Adenoma and carcinoma
- 8- Regarding isotope thyroid scan,
 - Most useful in toxic adenoma of thyroid
 - Cold nodule → Under active nodules (usually Malignant nodule)
 - Warm nodule → Active nodules
 - Hot nodule → Over active nodules (usually Thyrotoxic nodule)
- 9- Indication of surgery in isolated thyroid swelling are: Toxic adenoma, Pressure symptoms, Neoplasia, for Cosmotic purposes
- 10- Regarding laryngeal paralysis :
 - 30 % of cases are idiopathic, 3-4 % of patients have congenital paralysis of one of the vocal cords (→ Do Indirect laryngoscope before any operation performed on the thyroid gland for medico-legal purposes)
- 11- Investigation of choice in SNG → U/S
If a dominant Nodule > 1.5 cm → FNABC (exclude malignancy)

THYROTOXICOSIS

1- **PRIMARY THYROTOXICOSIS (Grave's disease):** is an autoimmune disease that develops in a previously healthy thyroid gland where the gland is enlarged or shows mild enlargement.

2- Thyrotoxicosis should be suspected in :

- Children with growth spurt, Behavioral problems
- Un-explained tachycardia, arrhythmia, diarrhea, loss of weight
- Resistant heart failure

3- Effects of Thyrotoxicosis on Bone:

- **THYROTOXICOSIS** → Osteoporosis
- After operation → **BONE HUNGER...** (Osteoporotic bone withdraw Calcium from blood, manifested by Tetany)

4- Pretibial myxedema:

- Is a thickening of the skin by a mucin-like deposit.
- May be cyanotic when cold, Associated with clubbing of fingers and toes.

5- **TREATMENT OF THYROTOXICOSIS:**

Disadvantage of anti-thyroid drugs	Advantages of surgery
a- Treatment is prolonged	a- the goiter is removed
b- Failure rate after 2 years is 50%	b- the cure is rapid
c- It is impossible to predict which patient will go into remission	c- the cure rate is high if surgery is adequate
d- Some goiters enlarge and become vascular during treatment	

6- Regarding TTT. schedule for diffuse toxic goiter

- a- Over 45 years → radioactive iodine
- b- Under 45 years + large goiter → surgery
- c- Under 45 years + small goiter → anti- thyroid drugs

7- Surgery is the TTT of choice in toxic nodular goiter as it doesn't respond to drugs rapidly or to radiotherapy

8- The 1st line of TTT of Grave's disease is mainly medical for hope of permanent remission.

9- Patients on anti-thyroid drugs must do CBC periodically for fear of **AGRANULOCYTOSIS**

10- Post-thyroidectomy stridor may be due to:

- a. Bilateral RLN injury.
- b. Laryngeal edema.
- c. Tracheal collapse.
- d. Deep neck hematoma.

11- Indications of surgery in Grave's disease include:

- a) Large goiter which is uncommon with Grave's.
- b) Failure of conservative measures.
- c) Suspicion of malignancy.

12- **PEDIATRIC GRAVE'S DISEASE:** surgery is more preferred because radio-iodine is potentially carcinogenic and causes late myxedema and antithyroid drugs aren't without side effects.

13- **THYROTOXIC CRISES:**

- An ER case managed in ICU.. (IV fluids, IV hydrocortisone, Digoxin for heart failure, Lugol's iodine & propranolol)
- May follow an unrelated operation, Inadequate pre-operative preparation
- **SUPPROTIVE TTT** for dehydration, hyperpyrexia, restlessness is essential in Thyrotoxic crises

14- **EXOPHTHALMOS** is a common feature of Grave's disease (Radioactive iodine therapy is better avoided in TTT)

15- **SECONDARY THYROTOXICOSIS (Plummer's disease):**

- Develops on top of multinodular goiter
- In Plummer's disease there're active internodular tissue with inactive nodules.
- Cardiac symptoms are more prominent in Plummer's disease than in Grave's disease.

RETROSTERNAL GOITER

- Rarely caused by enlargement of ectopic thyroid tissue in the mediastinum.
- Asymptomatic and may present as dysphagia, Patients attend to chest clinic and diagnosed as "asthma"
- In severe cases there may be obstruction of superior Vena cava.
- Recurrent laryngeal paralysis is not common.
- TTT: Have to be removed piece meal.

THYROIDITIS**1. HASHIMOTO THYROIDITIS:**

- Presents as multi nodular goiter, features of chronic lymphocytic thyroiditis are common on histology
- Iry myxedema without detectable thyroid enlargement represents the end stage of the pathological process.
- Complications: Thyroid failure is common, Increase the risk of thyroid lymphoma.
- Investigations.. Auto antibodies against thyroid peroxidase, thyroglobulin.
- Ideal TTT. of hashimoto's thyroiditis is **THYROXIN** .. (DOESN'T ALWAYS require thyroidectomy)

2. RIEDLE'S THYROIDITIS

- Thyroid tissue is replaced by fibrous tissue.. (Mediastinal fibrosis) ..
- May be misdiagnosed as thyroid carcinoma
- Thyroid scan shows no uptake over the swelling.

3. DE QUERVAIN'S THYROIDITIS

- Due to viral infection
- In typical sub-acute presentation of De-Quervian thyroiditis there's pain in the knee, liver malaise, and firm irregular enlargement of thyroid.
- Investigations: Thyroid antibodies are absent.

Thyroid malignancy

1- Thyroid malignancy is more in females than in male.

2- **LATERAL ABBERANT THYROID**... A metastasis in arrival lymph from an occult thyroid carcinoma.

3- **SPREAD:** Papillary carcinoma → lymphatic route, Follicular carcinoma → blood & Anaplastic carcinoma → Local infiltration of surrounding tissue

4- Metastasis to cervical LN occurs in 50-60%.

5- PAPILLARY CARCINOMA

- The most common Iry malignant thyroid tumor, Slowest growing tumor & may turn to anaplastic form
- Dependent on TSH stimulation.
- Has a tendency to become more malignant with age.
- Not associated with hoarseness of voice.

6- **FOLLICULAR ADENOMA** presents clinically as a solitary nodule, Best TTT is **LOBECTOMY**

N.B. (Distinction bet. Follicular adenoma and carcinoma can only be made by histopathological examination, In adenoma there is no invasion of the capsule or pericapsular blood vessels)

7- FOLLICULAR CARCINOMA

- Thyroid cancer with multiple bone metastasis
- If suspected → Hemi thyroidectomy is needed to diagnose it.

8- FNABC findings are diagnostic regarding papillary carcinoma, but not a conclusive evidence regarding follicular carcinoma.

9- ANAPLASTIC CARCINOMA

- Usually affects old males & carry worst prognosis.
- Total thyroidectomy is often impossible for anaplastic carcinoma.

10- MEDULLARY CARCINOMA

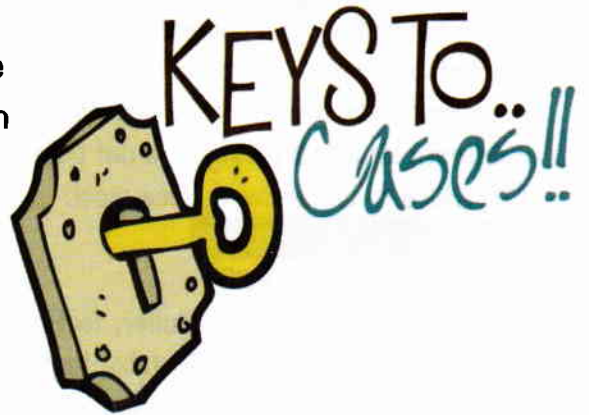
- A tumor of C- cells derived from neural crest with characteristic amyloid stroma and ↑ calcitonin.
- May present with (Earache, hoarseness, stridor, Enlarged cervical LN, Diarrhea due to serotonin)
- In thyroid carcinoma, Mediastinal node involvement is a feature of medullary carcinoma of thyroid.
- The level of calcitonin falls after the resection of the tumor.

11- PHEOCHROMOCYTOMA

- May be found at aortic bifurcation.
- Rule of ten → 10% bilateral -10% extra adrenal - 10% multiple

1. Young pregnant female presents with mild diffuse enlargement of the thyroid gland occurs for first time in pregnancy and gives history for the same condition with previous pregnancy which fades with delivery.

Diffuse simple goiter



2. Young female with NO History of thyroid disease subjected to Psychic trauma, presented with diffuse enlargement of the gland, Toxic C/O

Diffuse toxic goiter

3. Middle aged female with Past history of thyroid disease presented with toxic symptoms, On Palpation: Thyroid was Nodular

Toxic Nodular goiter

4. Female with one palpable nodule in her neck- thyroid scan shows hot nodule.

Toxic Thyroid Nodule

5. Middle aged female with past history to thyroid disease with or without exposure to a stressful condition presented with hyperthermia, arrhythmia up to coma

Thyrotoxic Crises

6. Obese male, complaining of dyspnea, with history of neck swelling which disappeared recently , and pressure symptoms appeared.

Retrosternal goiter

7. Middle aged Female with enlargement of thyroid gland, thyroid scan shows cold nodule & inter-nodular tissue

Hashimoto's thyroiditis

8. Old female with hard thyroid nodule, pressure manifestations, Frozen neck, retroperitoneal fibrosis.

Reidle's Thyroiditis

9. young female with solitary thyroid nodule & no toxic or pressure manifestations

Papillary carcinoma

10. Old female with past history of SNG, Rapidly progressive swelling in neck, picture similar to a skull abscess.. Thyroid scan shows cold nodule

Follicular carcinoma

11. Old male with rapidly progressive swelling in neck, absent carotid pulsation & hoarseness of voice.

Anaplastic carcinoma

12. Old age patient with rapidly progressive swelling in neck, +ve family history presented with Diarrhea, Bronchospasm, Flushing (Carcinoid syndrome)

Medullary carcinoma

THYROID QUESTIONS



- Give an explanation for: Papillary carcinoma of thyroid should be treated by total Thyroidectomy
(Kasr: 2008)
- Management of Thyrotoxicosis, Treatment of Primary thyrotoxicosis
(Azhar M: 2012, 2011, 2001, Ain shams: 2001)
- Management of solitary thyroid nodule
(Ain shams 2002, 2005, Azhar F: 2003
- Azhar M: 2009, 2004, 2003)
- Management of thyroid Neoplasia
(Ain shams: 2005 - Azhar M: 2011)
- Thyro-glossal cyst : etiology , types and C/P , Treatment
(Ain shams: 2009, Azhar F: 2005 - Azhar M: 2000)
- Multinodular goiter: investigations, Complications
(Azhar F: 2006, Azhar F: 2009)
- Toxic goiter: Types and Treatment
(Azhar F: 2010, 2005, 2004, Azhar F: 2001)
- Hyper-parathyroidism: Diagnosis & Investigations
(Azhar F: 2009, Azhar F: 2010)
- Retro-sternal goiter: C/P
(Azhar F: 2010)
- Thyrotoxic crisis: Investigations
(Azhar M: 2005)
- Complications of Thyroidectomy
(Azhar M: 2002)

TAKE YOUR
Notes!!

A cartoon-style illustration of a notepad with a yellow cover and a pencil resting on it. The notepad has several lines of text on it, and the pencil is yellow with a pink eraser.

SURGI- TOONS

ENDOCRINE SURGERY



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ENDOCRINE SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Cushing syndrome
- Pheochromocytoma
- Hyperparathyroidism

CUSHING SYNDROME

☒ CUSHING SYNDROME: Chronic ↑ of cortisol levels

☒ CUSHING DISEASE: ↑ Cortisol secondary to pituitary tumor

☒ ETIOLOGY

ACTH DEPENDANT	NON- ACTH DEPENDANT
☒ Pituitary adenoma 80% of cases	☒ Adrenal tumor
☒ Ectopic ACTH syndrome	☒ Iatrogenic: Prolonged Corticosteroid therapy
☒ Iatrogenic.. Prolonged ACTH therapy	

☒ CLINICAL PICTURE:

SKIN

- Facial plethora
- Red striations over abdomen, ecchymosis
- Thin skin
- Hirsutism, ↑ Facial hair

Muscles, Bones

- Muscle weakness
- Osteoporosis
-



FAT DISTRIBUTION:

- Moon Face (Face)
- Buffalo hump (upper back)
- Supraclavicular Fat pads (above clavicles)
- Truncal obesity
- ↑Waist-hip ratio >1 in men, 0.8 in women

Cardiovascular, Renal , Endocrine

- Hypertension
- Diabetes mellitus
- Edema
- Menstrual irregularities, amenorrhea, infertility

☒ INVESTIGATIONS

- ↑Urinary free Cortisol, 17 OH- cortisol
- **PLASMA CORTISOL LEVEL** ... (5-20 mg/dl)
 - ↳ EARLY → Loss of circadian rhythm
 - ↳ LATE → ↑levels of cortisol
- **LOW DOSE DEXAMETHASONE SUPPRESSION TEST** (dexamethasone 0.5mg/6 hours for 2 days)

Inhibition of ACTH secretion, ↓ Cortisol levels
↓
NORMAL

Cortisol levels unchanged
↓
CUSHING SYNDROME

ACTH test

↑ = **PITUITARY TUMOR**
CT Scan sella turcica, MRI

↓ = **ADRENAL TUMOR**
CT abdomen, MRI, U/S, Selective adrenal venous sampling

☒ TREATMENT

↳ PITUITARY TUMORS:

- ✧ Trans-sphenoidal removal of tumor
- ✧ Hypophysectomy or pituitary irradiation followed by replacement therapy

↳ ADRENAL TUMORS:

- ✧ Surgical removal followed by suboptimal replacement therapy with low dose steroids.. (Till other adrenal gland recovers from suppression)

↳ MEDICAL THERAPY FOR PRE-OPERATIVE PREPARATION .. C-metyrapone

PHEOCHROMOCYTOMA

☒ **DEFINITION:** Tumor of chromaffin tissues secreting Catecholamines

☒ **ETIOLOGY:**

SPORADIC	FAMILIAL
☒ Adult	☒ Child
☒ <10% Bilateral	☒ 50% bilateral
☒ 10% malignant, 10% multiple	☒ May be part of "MEN II"

Organ of "ZUCKER KANDL"

- ☒ Formed of Embryonic Chromaffin cells around abdominal aorta that Normally atrophy during Childhood
- ☒ Major sites of Extra-adrenal Pheochromocytoma

☒ **CLINICAL PICTURE**

EARLY PAROXYSMAL HYPERTENSION , DM IN YOUNG AGE

- Screening of Hypertensive patients for Pheochromocytoma :
 - Recent onset of retinopathy with DM
 - Symptomatic HTN + Vasomotor phenomena or DM
 - Episodic HTN (e.g. Postural HTN)



ATTACKS OF HYPERCHATECHOLAMINAEMIA

- Tachycardia, Palpitation
- Sweating, pallor
- Anxiety , Tremors
- Arrhythmia, precipitation of angina

▪ HYPERTROPHIC CARDIOMYOPATHY

▪ FEATURES OF "MEN II":

- Medullary carcinoma
- Hyperparathyroidism
- Neurofibromatosis



☒ **INVESTIGATIONS**

- **LABORATORY ...** ↑ Urinary VMA, Catecholamines, Plasma Catecholamines
- **RADIOLOGY ...** Abdominal U/S, CT scan, MRI, Selective adrenal vein sampling

☒ **TREATMENT:**

- **ADRENALECTOMY** of diseased side after Pre-operative preparation by Alpha blockers 7-10 days followed by Beta blockers for 3-4 days before operation
N.B. avoid using HALOTHANE in anesthesia to avoid arrhythmia

HYPERPARATHYROIDISM

☒ ETIOLOGY:

PRIMARY	SECONDARY	TERTIARY	PARAMALIGNANT \$
☒ ADENOMA: - 92% of cases - Middle aged female - Affects 1 gland ☒ Other causes: e.g. Hyperplasia, Carcinoma, Multiple adenomata	☒ Compensatory hyperplasia due to prolonged hypercalcemia (e.g. CRF, Malabsorption)	☒ After prolonged secondary hyperparathyroidism	☒ Ectopic secretion of PTH by small cell bronchial carcinoma

☒ CLINICAL PICTURE:

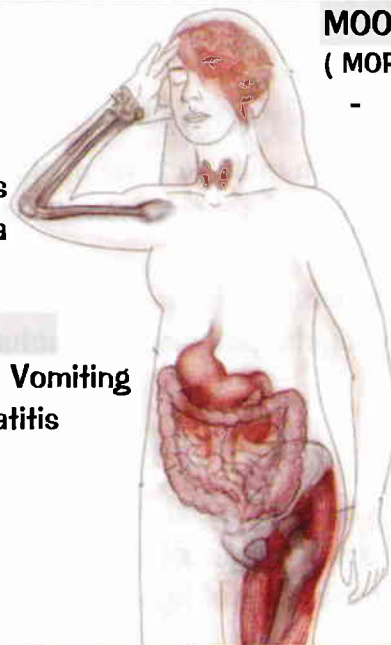
ASYMPTOMATIC HYPERCALCEMIA .. BONE + STONE + MOOD + GIT

BONE

- Bone pain
- Pathological fractures
- Ostitis fibrosa cystica

GIT

- Anorexia, Nausea, Vomiting
- PU, acute pancreatitis



MOOD..

(MORE IN PATIENTS >60 YEARS)

- Apathy, loss of concentration, Depression

STONE ..

(MORE IN PATIENTS <60 YEARS)

- Recurrent Renal stones
- Nephrocalcinosis

☒ INVESTIGATIONS:

FOR HYPERPARATHYROIDISM	FOR LOCALIZATION IN RECURRENT CASES
☒ ↑ Serum calcium except in 2ry hyperparathyroidism ☒ ↓ Serum Phosphorus ☒ ↑ Serum PTH ☒ X-RAY: multiple bone cysts, reabsorption of terminal bone of pharynx	☒ SESTA MIBI scanning ... MOST ACCURATE ☒ CT scan ☒ TC ₉₉

☒ TREATMENT

☒ **PRIMARY HYPERPARATHYROIDISM** → Surgical removal of enlarged gland

- Adenoma → resection
- Hyperplasia → removal of 2/3 of gland & implantation of 1/3 in deltoid .

☒ **SECONDARY HYPERPARATHYROIDISM**

- 1 alpha hydroxyl Vitamin D3
- Calcimimetics

☒ **TERTIARY HYPERPARATHYROIDISM**

- Total parathyroidectomy with autotransplantation of parathyroid fragment equal to normal size in arm Muscles

PARATHYROID TWEETS!!



Regarding PARATHYROID HORMONE (PTH):

- A peptide hormone
- ↑ Phosphorus excretion in urine.
- PTH serum levels are ↑ in chronic renal failure.
- Require vitamin D as a precursor.

ETIOLOGY OF HYPERPARATHYROIDISM:

Hyperparathyroidism result from single adenoma (the most common cause) or multiple adenoma, Carcinoma is a rare cause.

CLINICAL PICTURE OF HYPERPARATHYROIDISM:

- 1- Hyperparathyroidism associated with multiple bone cysts, can present with renal stones.
- 2- As regard hyperparathyroidism, the commonest presentation is asymptomatic hypercalcemia.
- 3- Clinical features related to hyperparathyroidism
 - a- Bone pain, multiple bone cysts, pathological fracture
 - b- Renal stones.
 - c- Abdominal Groan
 - d- Psychic moan
- 4- Chvostek's sign is twitching of the facial muscles produced by tapping over the prominence of facial bone in front of tragus of the ear in a person has tetany.
- 5- Pancreatitis is a recognized complication of hyperparathyroidism.

INVESTIGATIONS OF HYPERPARATHYROIDISM:

- 1- The biochemical findings related to hyperparathyroidism:
 - ↑ Serum alkaline Phosphatase
 - ↑ Ca in urine.
- 2- Radionuclide scan is the best way of preoperative localization of parathyroid adenoma.

TREATMENT OF HYPERPARATHYROIDISM:

- 1- Hyperparathyroidism can't be cured by using anti- parathyroid hormone drugs.
- 2- TTT. of hyperparathyroidism
 - 1st: Surgery
 - 2nd : medical
 - 3rd: surgery





SURGI- TOONS

SWELLINGS *and* SALIVARY GLANDS



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SWELLINGS SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Lipoma
- Neurofibroma
- Hemangioma
- Vascular malformations
- Dermoid cyst
- Fistulas
- Simple ganglion
- Miscellaneous topics

LIPOMA

DEFINITION: Benign tumor arising from adipose tissues

SUBCUTANEOUS

- ⊖ **MOST COMMON TYPE**
- ⊖ **SITE :** Back, shoulder, Buttocks
- ⊖ Attached to Skin
- ⊖ Well defined slippery edge
- ⊖ Mobile

SUBFASCIAL

- ⊖ **SITE:** Forehead
- ⊖ Firm
- ⊖ Not attached to skin
- ⊖ NO slippery edge
- ⊖ Limited mobility

SUB-SYNOVIAL

- ⊖ Diagnosed by MRI
- ⊖ DD: Osteo-arthritis, Baker's Cyst

SUB-MUCOUS

- ⊖ **DANGEROUS** → **COMPLICATIONS:**
 - Respiratory obstruction
 - Intussusception

SUB-PERIOSTEAL

- ⊖ Related to Long, flat bones
- ⊖ Diagnosis: MRI

EXTRA-DURAL

- ⊖ **Site:** Spinal cord **BUT NEVER IN BRAIN (no fat)**
- ⊖ **CP:** Pressure manifestations

INTERMUSCULAR

- ⊖ **Site:** Thighs, shoulders
- ⊖ **OE :** becomes more firm on Muscular contraction

GENERAL SCHEME

- ⊖ **C/O :** **PAINLESS** swelling, of gradual onset

- ⊖ **O/E :**

Number	SINGLE except "Dercum disease , Diffuse lipoma"
Site, size	variable
Shape	Rounded or oval
surface	Lobulated
Consistency	SOFT except "fibro-lipoma, subfascial lipoma "
Cut section	fibrous capsule divides it into spaces
Capsule	2 capsules with line of cleavage in-between.

- ⊖ **MICROSCOPIC PICTURE:**

Aggregation of Fat cells → **SIGNET RING APPEARANCE**, separated by fibrous tissue, contains Blood vessels

- ⊖ **INVESTIGATIONS:** ... Clinically diagnosed...

SPECIFIC: Excisional biopsy, X-ray, Spiral CT spinal cord

- ⊖ Treatment of choice is Enucleation of tumor from its Capsule



* MISCELLANEOUS *

PAINFULL LIPOMA

- ⊖ Neuro-Lipoma
- ⊖ Dercum disease
- ⊖ Complicated lipoma

DERCUM DISEASE

- ⊖ **Patient:** Female, post-menopausal patient
- ⊖ **Site:** lower limb
- ⊖ **Clinical picture:** Small, multiple, Painful swellings

DANGEROUS LIPOMA

- ⊖ **SUBMUCOUS** → Respiratory Obstruction & Intestinal Intussusception
- ⊖ **RETRO-PERITONEAL** → Premalignant
- ⊖ **EXTRADURAL** → Pressure manifestations

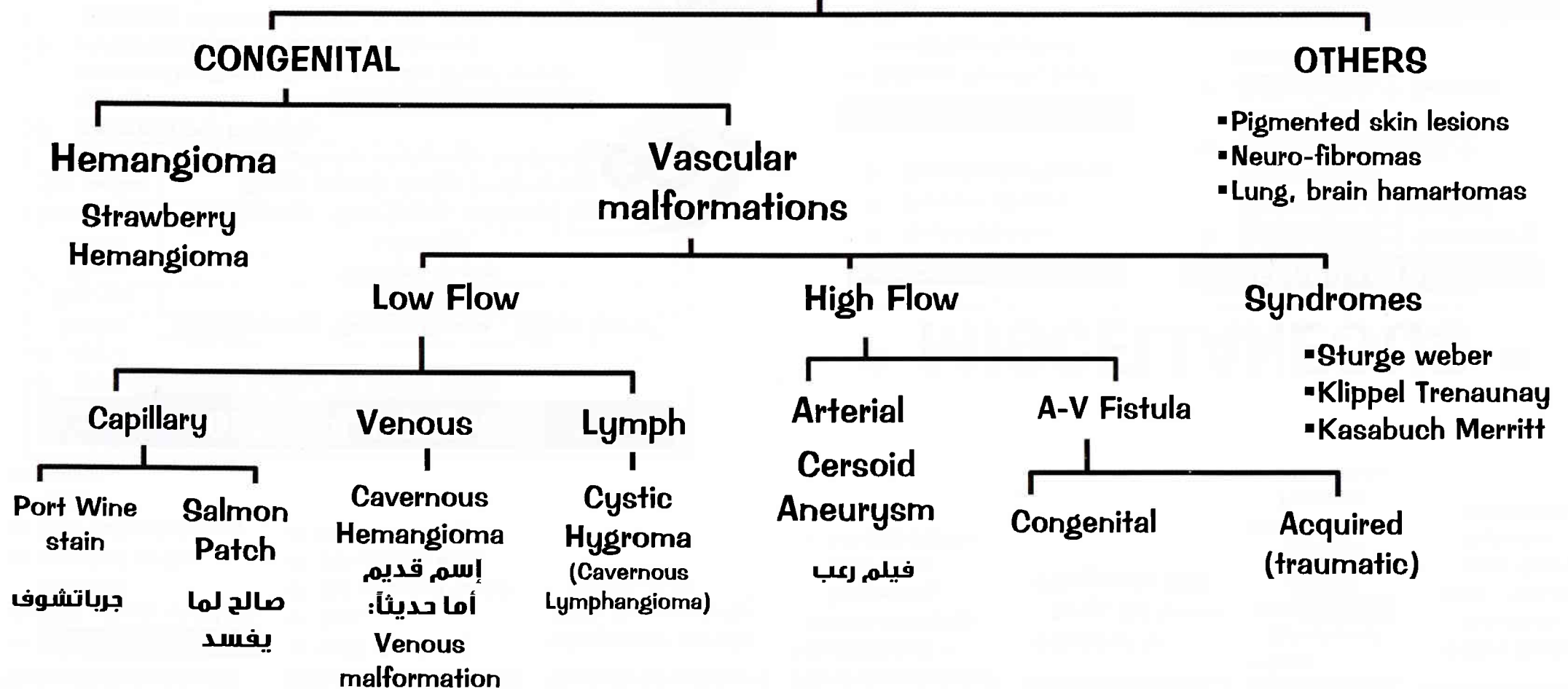
PRE-MALIGNANT LIPOMA

- ⊖ Retro-peritoneal lipoma
- ⊖ **SC lipoma** in Thighs, Buttocks (slightly higher incidence)

HAMARTOMA

DEFINITION:

Mal-arrangement of Normal tissues



NEUROFIBROMA

⊖ **DEFINITION:** Tumor like mass formed from Nerve sheath

GENERALIZED

VON RECKLING HAUSEN DISEASE MOST COMMON TYPE

TYPE(I):

- AD, Chromosome 17
- **CLINICAL PICTURE:**
 - Tenderness
 - + Café au lait patches
 - + Pheochromocytoma (if a part of MEN IIb \$)
- Special character in Type(I):
 - ↑ Intra cranial tension

TYPE(II) ACOUSTIC NEUROMA:

- Chromosome 22
- Associated with Acoustic Nerve tumor
- **CLINICAL PICTURE:** Painful , leading to Deafness & vertigo

SOLITARY

Café au lait patches

PACHY DERMATOCELE

PLEXIFORM NEUROMA

- ⊖ Cystic swelling in the face
- ⊖ **Palpation:** Sensation of bag of worms

MOLLUSCUM FIBROSUM

- ⊖ **Site:** Scalp, face, trunk
- ⊖ **Consistency:** Soft

ELEPHANTIASIS NEUROFIBROMATOSIS

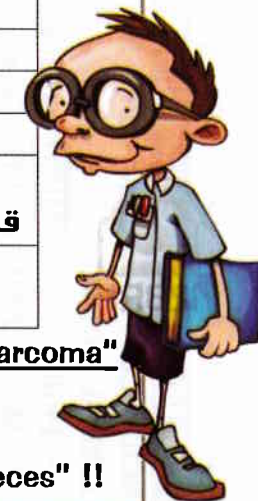
- ⊖ Congenital disease
- ⊖ **Site:** Limbs
- ⊖ **Clinical picture:** Hypertrophy

GENERAL SCHEME

- ⊖ C/O: painless swelling, of gradual onset, progressive course
- ⊖ O/E:

Number	Single or multiple
Site	Subcutaneous
Size	Variable
Shape	Rounded
Consistency	Firm
Mobility	⊖ Not attached to skin ⊖ Moves across Nerve قاعدة الرقاصة
Special character	Café au lait patches

- ⊖ **COMPLICATIONS:** May turn Malignant → "Neuro-fibrosarcoma"
- ⊖ **TREATMENT:**
 - If single → Excision
 - If Multiple: "Let the patient die in peace not in pieces" !!



STRAWBERRY HEMANGIOMA

- **DEFINITION:** Benign tumor of Endothelial cells
- **MOST COMMON VASCULAR TUMOR IN INFANCY**
- **INCIDENCE:** 70% growing during the first year
- **CLINICAL PICTURE:**
 - ❖ Erythematous **RAISED** patch with irregular surface
 - ❖ **MOST COMMON SITE:** Face
 - ❖ Appears at birth or shortly after birth, ↑ in size in the first 6-12 months
 - ❖ Involution starts after 1 year: (50% by 5 years, 70% by 7 years)
 - ❖ The remnant of after-involution is better than scar of surgery
- **COMPLICATIONS:**
 - ❖ **ULCERATION**, Ampylopia, Blindness, Squint
- **TREATMENT:**
 - **CONSERVATIVE** unless Complicated (The remnant of after involution is better than scar of surgery)
 - **ACTIVE TTT**→ Cortisone injection , LASER Photocoagulation, Surgical debulking



PORTWINE STAIN

MOST COMMON VASCULAR MALFORMATION



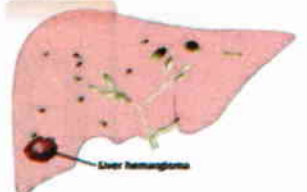
جورياتشوف

- Appears **AT BIRTH**→ NO spontaneous Involution
- **CLINICAL PICTURE:** Deep purple lesion, NOT RAISED, Pressure causes blanching
:: May be part of **STURGE WEBER** \$... if associated with similar lesions in meninges ::
- **COMPLICATIONS :**
 - Take the distribution of **TRIGEMINAL NERVE** but **NEVER CROSSES MIDLINE** .
- **Treatment :**
 - **DURING CHILDHOOD**→ Pulsed dye laser
 - **DURING ADULTHOOD**→ YAG laser

VENOUS MALFORMATIONS (CAVERNOUS HEMANGIOMA)

- Types

	EXTERNAL	INTERNAL
Site	Cheeks, lips, eye, tongue	LIVER
C/P	▪ Decolorized compressible swelling ▪ On Compression→ SIGN OF EMPTYING	THROMBOCYTOPENIC PURPURA "KASSABACH'S MERRIT \$"



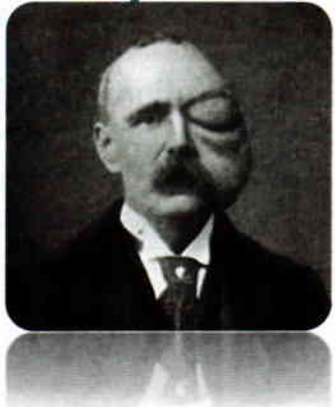
- Appears **AT BIRTH**→ NO spontaneous Involution
- **INVESTIGATIONS:** Arteriography, CT scan
- **TREATMENT:**
 - Compression therapy to relieve pain, edema
 - Percutaneous sclerosis
 - Surgical excision after pre-operable embolization
 - Interstitial laser coagulation



- **U/S**→ Hyper-echoic lesion in liver
- **ANGIOGRAPHY**→ Centripetal arrangement of dye

ARTERIAL MALFORMATIONS (CERVOID ANEURYSM)

- Most common site
 - ❖ SCALP (temporal , Occipital region)
- C/P
 - ❖ C/O: Headache + cosmetic disfigurement
 - ❖ O/E: Water hammer pulse, Irregular swelling with normal overlying skin, Pulsating with machinery murmur on auscultation
- Investigations :
 - 1) Doppler, Duplex
 - 2) ECA angiography
 - 3) Xray → Rarification of bones
- Treatment :
 - Surgical Excision
(Semisitting position, Hypotensive GA , Pre-operative Embolisation , ligation of ECA)



LYMPHATIC MALFORMATIONS (CYSTIC HYGROMA)

- Appears in Neonates

Number	Single
Site	Root of neck in Posterior triangle, superficial to sternomastoid ms.
Size	large
Shape	Rounded
Surface	irregular
Edge	ill defined
Consistency	Lax, Cystic
Special characters	▪ Translucent ▪ Partially compressible ▪ NON-pulsating

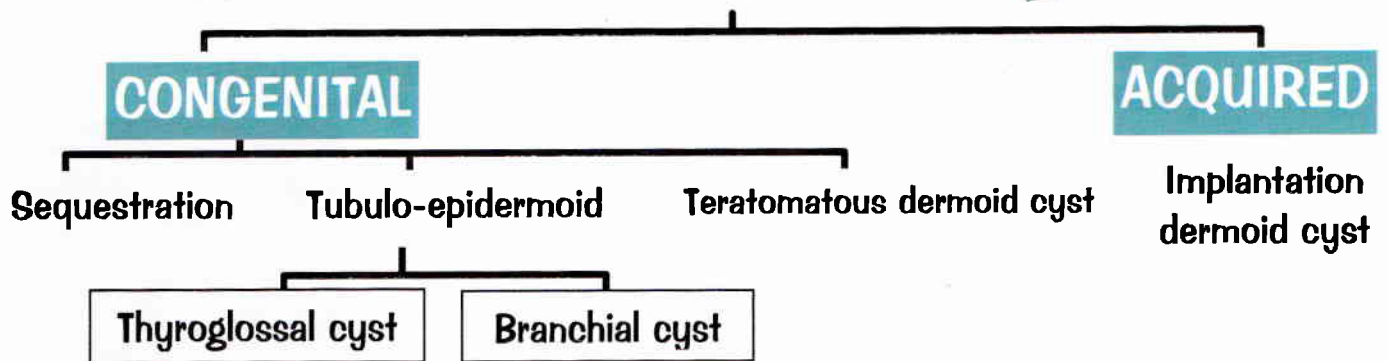


- DD : Branchial Cyst

BRANCHIAL CYST	CYSTIC HYGROMA
Deep to Sternomastoid	Superficial
Protrude from anterior Border	Extends to Posterior Triangle

- Treatment:
 - Wait for 2 years for spontaneous regression
 - Surgical Excision after injection of boiled water

DERMOID CYST



DD of Dermoid cyst: Sebaceous cyst (epidermoid cyst)

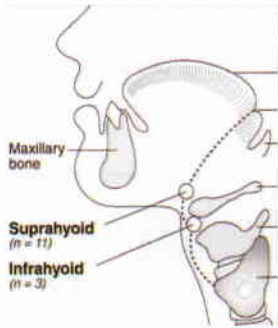
SEBACEOUS CYST (EPIDERMOID CYST)

- Site: Anywhere in skin related to hair but **NEVER IN PALMS AND SOLES**.
- Appears after adolescence → Grows stationary with NO spontaneous Involution
- C/P
 - ❖ Slowly growing SC swelling attached to skin at a point → **PUNCTUM (black spot)** → Contains sebaceous material which can be Squeezed
 - ❖ **Tense non-compressible**
- Complications :
 - Infection, Inflammation → Becomes larger size, tender, fixed to deep structures.
 - Sebaceous Horn → dryness → Inspissiated sebum → Protrusion over skin
 - **COCK'S PECULIAR TUMOR** (ulceration of sebaceous horn) → BIOPSY (D.D. SCC)
- Treatment :
 - Uncomplicated → Excision through **ELLIPTICAL INCISION**
 - If infected → INCISION, DRAINAGE & ANTBIOTICS → EXCISION after inflammation subsides

IMPLANTATION DERMOID CYST

- **DEFINITION:** An Acquired dermoid cyst
- **ETIOLOGY**
 - Pricking wound (**TRAUMATIC**)
 - Skin graft in hernioplasty
- **PATHOLOGY** Site: In the tip of fingers
- **CLINICAL PICTURE:**
 - Patient: Sewer or manual worker
 - C/O: Slowly growing swelling, Painless early then painful later (due to compression on nerve endings)
 - O/E: Cyst with scarred skin
- **COMPLICATIONS:** as any cyst..
- **TREATMENT**
 - Uncomplicated → Excision
 - If infected → INCISION & DRAINAGE EXCISION after inflammation subsides

FISTULAS



THYROGLOSSAL FISTULA	BRANCHIAL FISTULA	
ACQUIRED (Never congenital)	CONGENITAL	ACQUIRED
▪ Infection → rupture ▪ Inadequate excision of cyst	Since birth	▪ Rupture ▪ Incomplete excision or incision
▪ Opening is near midline or to the Left side ▪ Viscous discharge or pus	Longer	Shorter
	▪ Partially deep to sternomastoid muscle giving Mucoïd discharge (rich in Cholesterol)	

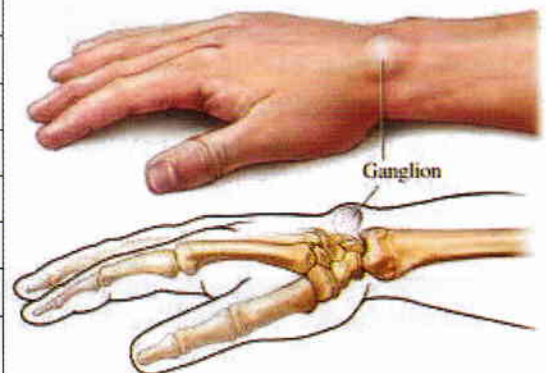


N.B. Branchial cyst, Thyroglossal cyst ... See Pediatrics surgery

SIMPLE GANGLION

- **DEFINITION:** Chronic cyst containing mucoïd material, related to a tendon
- **ETIOLOGY:** Mucoïd degeneration of fibrous tissue of tendon sheath
- **C/O:** Painless swelling at dorsum of hand or around ankle
- **O/E:**

NUMBER	Single
SITE	dorsum of hand
SIZE	
SHAPE	Rounded
SURFACE	Tense
EDGE	Well defined
CONSISTENCY	Cystic (PAGET'S TEST)
SPECIAL CHARACTERS	▪ Moves across tendon ▪ Mobility ↓ by Pulling on tendon



- **COMPLICATIONS:**
 - Infection, hemorrhage, Calcification
 - Rupture
 - Malignant changes
- **INVESTIGATIONS:**
 - X-ray on Hand
 - Excisional Biopsy
 - Aspiration or rupture of cyst
- **TREATMENT :**
 - Complete Excision Under General anesthesia

MISCELLANEOUS TOPICS

Klippel Trenaunay \$:

- ⊕ Port wine
- ⊕ 2ry varicose veins due to A-V fistula

Sturge weber syndrome:

- Common association with Port wine stain
- ⊕ Capillary vascular malformation
- ⊕ Lepto-meningeal AV malformations
- ⊕ AV Malformation in Extremities

Kassabach's merit \$:

- ⊕ Hemangioma + Thrombocytopenia
- ⊕ Vascular tumor leading to ↓Platelet & other bleeding disorders
- ⊕ Complications: DIC

Laryngocele عازف الساكس

- ⊕ Weak point in Thyroid membrane
- ⊕ Cystic swelling in the Neck
- ⊕ Becomes Prominent on Straining



Pneumatocoele

- ⊕ Herniation of Lung apex through Sibson's fascia
- ⊕ Cystic swelling in Supra-clavicular region
- ⊕ Prominent on straining



Ranula

- ⊕ Site: On one side of tongue
- ⊕ ORIGIN: Sub-lingual gland
- ⊕ Cystic, Translucent
- ⊕ Blood vessels over it, Mucous membrane
- ⊕ Crossed by Wharton's duct
- ⊕ If ruptured → Pass between the Muscles to the neck (PLUNGING TYPE)
- ⊕ Treatment : Marsupilization (deroofting)



KELOID

مشكلة العيان : اللبن برة الكاسارونة

Extends beyond the edges of the wound

- ⊕ Site : Face, neck, front of Chest & abdomen
- ⊕ Common in Negros
- ⊕ Have inherited tendency
- ⊕ Acute: أبيض → Chronic: بهي



Bursae

- ⊕ Pre-patellar : Housemaid
- ⊕ Olecranon : Students
- ⊕ Over head of shoulder : Porters
- ⊕ Over big toe : Bunion

Baker's Cyst

- ⊕ Occurs in midline of the back of kneo
- ⊕ If ruptures → Severe pain (DD : DVT)

Desmoid tumor = Baget's tumor

- ⊕ Locally malignant tumor in a Mutipara female
- ⊕ Common with GARDENER \$
- ⊕ Site :
 - At site of previous surgical incision
 - From the rectus sheath, Rt > Lt
 - NEVER IN MIDLINE
- ⊕ Best investigations : MRI
- ⊕ Treatment:
 - Surgical excision with safety margin 2.5 cm + Post-operative radiotherapy to avoid recurrence



SALIVARY GLANDS

TOPICS DISCUSSED IN THIS CHAPTER:

- Acute Bacterial Sialoadenitis
- Salivary stone
- Salivary fistula
- Salivary tumors

ACUTE BACTERIAL SIALOADENITIS

⊖ Definition Acute suppurative inflammation of salivary gland (PAROTID)

⊖ Etiology (Org, PDF, Route)

- ♣ Organism STAPH , pneumococci
- ♣ Predisposing factors... Post-operative dehydration, Poor Oral hygiene, Obstruction by Stone
- ♣ Route of infectionsDirect from the mouth, Blood born.

⊖ CP (Symptoms, signs)

	SYMPTOMS	SIGNS	
		BEFORE SUPPURATION	AFTER SUPPURATION
General	FAHM	Mild toxemia	HECTIC fever , Tachycardia
Local	♣ Severe pain on side of the face ♣ ↑on eating or on ingestion of lemon or acidic juice (LEMON TEST)	♣ Gland: ▪ Enlarged ▪ Firm, tender ▪ Raising lobule of the ear ♣ DUCT is inflamed	♣ Gland: FLUCTUATION IS VERY LATE (Don't wait for fluctuation) ♣ Duct → Exudation of Pus

⊖ Complications

- ♣ GENERAL.... Chronicity , Bacteremia, septicemia, Pyemia, Toxemia
- ♣ LOCAL... Stone, fistula

⊖ Investigations

- ♣ CBC: ↑TLC, ↑ESR, ↑CRP
- ♣ C/S
- ♣ Plain X-ray → STONE

⊖ Treatment

- ♣ Prophylacticavoid PDF factors
- ♣ General → Rest, Analgesics, Antipyretics, Antibiotics (**CLINDAMYCIN** : ↑Concentration in saliva)
- ♣ Surgical drainage of parotid Abscess خدمة خمس نجوم فى فندق هيلتون و بلير
 - 1) Blaire incision under G.A. → Hilton's technique → C&S + Drainage
- ♣ Surgical drainage of submandibular Abscess:
 - 1) Incision 2 cm parallel to lower border of mandible below & in front of angle of mandible → Helton technique
 - 2) Complications of drainage.... Fistula + Facial N. injury + Frey's post-operative \$

FREY'S POSTOPERATIVE SYNDROME

- Condition following surgery or injury of the parotid gland or TMJ
- **PATHOGENESIS:** Cross regeneration of Parasympathetic & Sympathetic fibers
- **CLINICAL PICTURE:** Flushing, Sweating of Skin innervated by Auriculotemporal N. whenever salivation is stimulated



SALIVARY STONE

⊖ Incidence :

- Submandibular > parotid (50:1)
 - More viscid secretion, ↑ Concentration of Ca^{+2}
 - Duct ascends upwards ... Inadequate drainage
 - Orifice lies in the floor of mouth ... Could be blocked

⊖ Predisposing factors :

- Infections (ex: Chronic sialoadenitis)
- Stasis (ex: Sjogren's \$)

⊖ Clinical picture: ... MAINLY ASYMPTOMATIC ...

- Episodes of pain after eating followed by relief in the side of Face

⊖ Investigations :

- Submandibular stone (radiopaque) → appear with x-ray (Closed mouth)
- Parotid stone (radiolucent) → appear with Sialography
- U/S → Echogenic stone + acoustic shadowing

⊖ Treatment :

- Submandibular → submandibular sialo-adenectomy
- Parotid Gland → Superficial conservative PAROTIDECTOMY
- Stone in Duct → according to place:
 - 1) Stone from orifice of Parotid Gland → Meatotomy
 - 2) Stone in duct → Removal under local anesthesia
 - 3) If Recurrent → Submandibular sialo-adenectomy

SALIVARY FISTULA

⊖ Etiology:

- Trauma, inflammation, Neoplasm

⊖ Types:

- External → requires TTT
- Internal → requires no TTT

⊖ Clinical picture:

- IF EXTERNAL → Watery discharge from opening + Eczema of skin around opening

⊖ Treatment:

- Submandibular fistula → submandibular Sialo-adenectomy
- PAROTID GLAND
 - CONSERVATIVE: Parasympathetic drugs for 1 week
 - Avulsion of auriculotemporal N. or superficial conservative parotidectomy
 - If fails → Total conservative parotidectomy
- PAROTID DUCT:
 - MASSETERIC → Excision with end to end anastomosis
 - PRE-MASSETERIC → re-implantation of duct in Buccinator

SALIVARY TUMORS

BENIGN

MALIGNANT

PLEOMORPHIC ADENOMA

MONOMORPHIC ADENOMA

(Wharton's tumor), (Adenolymphoma)
(Papillary cyst-adenoma-lymphomatosum)

قواعد ذهبية

- ↑Gland size ... ↑tumor incidence
- ↓Gland size ... ↑Malignancy
- Most tumors are BENIGN
- More common in parotid

	PLEOMORPHIC ADENOMA	MONOMORPHIC ADENOMA
Incidence	MOST COMMON SALIVARY TUMOR More common in Males	10% of Parotid tumors, BILATERAL IN 10 % Old age, smokers
Macro.	Multicentric + Incomplete Capsule	Cystic, encapsulated tumor
Micro.	Epithelial cells + mucinous material	Columnar epithelium + Lymphoid tissue
Malignancy	▪ Benign .. Malignant transformation occurs after 10 years (rare in 2-3%)	NEVER TURNS MALIGNANT
C/O	Painless, slowly growing swelling in the side of the face	
Site	Parotid → Superficial part	Parotid → Superficial part, INFRONT OF TRAGUS
Size	Variable	
Shape	Irregular	
Surface	Lobulated	
Consistency	Firm or cystic.. (NEVER HARD)	ALWAYS CYSTIC OR SOFT
Mobility	freely mobile	
Special character	ELEVATES LOBULE OF THE EAR	DOESN'T ELEVATE LOBULE OF THE EAR
Investigations	▪ CTscan ▪ Tc99 → COLD spot (Avascular) ▪ Free needle biopsy	▪ CTscan ▪ Tc99 → HOT spot
Treatment	SURGICAL TTT (see later)	Conservative superficial parotidectomy

MUCO-EPIDERMOID CARCINOMA

- Most common type
- Sheers of Columnar + squamous epithelium

ADENOID CYSTIC CARCINOMA

- Most common malignancy among Minor salivary glands
- Slow rate of growth, **PERI-NEURAL SPREAD**
- **SWISS CHEESE APPEARANCE**
(Myo-epithelial + epithelial cells)

ACINIC CELL CARCINOMA

- Serous acini, **ONLY IN PAROTID GLAND**

ADENOCARCINOMA ... Bad prognosis

CARCINOMA EX-PLEOMORPHIC ADENOMA

UNDIFFERENTIATED CARCINOMA

Symptoms

- Pain: ↑with mastication
- Swelling on the side of face
- Disturbance Of function Facial N. palsy

Signs of malignant tumor ... SWELLING

- Firm to hard
- Irregular, Nodular surface
- Ill-defined edge, Infiltrative to skin, vessels
- LNs ++

Investigations:

- For diagnosis → Tc99 (COLD) + Biopsy
- For staging → CT, FNABC

TREATMENT OF SALIVARY TUMORS

BENIGN

PLEOMORPHIC ADENOMA

PAROTID GLAND:

- Superficial conservative parotidectomy
- Total conservative parotidectomy (preservation of facial N.)

SUBMANDIBULAR GLAND:

Submandibular sialadenectomy

3 nerves could be injured:

- 1) Facial N. (Cervical & mandibular Br.)
- 2) Lingual N.
- 3) Hypoglossal N.

MONO-MORPHIC ADENOMA

PAROTID GLAND:

- Superficial conservative parotidectomy

MALIGNANT

PAROTID GLAND

IF OPERABLE:

- Total radical parotidectomy
- Total block dissection of neck LNs
- Post-operative Radiotherapy

IF OPERABLE:

- Palliative resection + Radiotherapy

SUBMANDIBULAR GLAND

COMMANDO OPERATION

- Total radical submandibular sialadenectomy
- Hemi-mandibulectomy
- Block dissection of LNs

How to know that the tumor exists in the deep part of parotid gland

- Clinically → Examine Oropharynx behind Tonsils
(D.D. Carotid Body Tumor → Don't take biopsy as it's highly vascular)
- CT Scan



SWELLINGS AND CYSTS

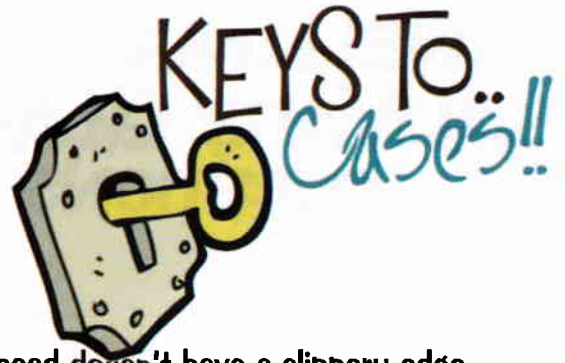
1. Lipoma is a universal tumor.
2. Plexiform Neurofibromatosis **NEVER** affects **TRIGEMINAL NERVE**
3. Branchial cyst is best differentiated from cold abscess by containing cholesterol crystals.
4. **CYSTIC HYGROMA** can be the **EARLIEST SWELLING OF THE NECK** to appear in life.
5. Cervical LNs are "300" out of the 800 lymph nodes in the body
6. **THYROGLOSSAL FISTULA:**
 - May follow infection, inadequate removal of thyroglossal cyst.
 - It is lined by columnar epithelium and never be congenital
7. Thyroglossal cyst May be present in any part of the thyroglossal tract.

SALIVARY GLANDS

1. **RANULA** is the **MOST COMMON** indication for removal of sublingual salivary gland.
2. Most common salivary tumor is **PLEOMORPHIC ADENOMA**
3. Most common site for acute bacterial sialoadenitis is **PAROTID GLAND**
4. Sjogren's δ affects 4 glands $\rightarrow$ 3 salivary (submandibular, sublingual, parotid) + Lacrimal gland
- 5.

SUBLINGUAL GLAND	PAROTID GLAND	SUBMANDIBULAR GLAND
▪ It's Stones are the MOST OPAQUE ▪ It's secretions are most MUCINOUS ▪ It has the LEAST TUMOURS ▪ It's Tumors are most MALIGNANT	▪ It's Stones are the MOST RADIO-LUCENT ▪ It's secretions are the most SEROUS ▪ It has MOST TUMOURS ▪ It's tumors are Most BENIGN	▪ 80% of salivary stones arise from Submandibular Gland ▪ Gland secretions: Viscid + $\uparrow$Calcium concentration ▪ Duct ascends upwards: Orifice lies in floor of mouth

SWELINGS CASES



1. Middle aged male or female complaining of painless swelling in shoulder accidentally discovered. Clinical examination shows that it is lobulated and attached to skin by multiple points but mobile over deep structures.

Subcutaneous lipoma.

2. Patient complaining of firm painless swelling in the forehead doesn't have a slippery edge.

Sub facial lipoma.

4. Patient presented with painless swellings that move only across the nerves of gradual onset slowly progressive course associated with dark brown patches on the back. The patient gives positive family history to the same condition.

Generalized neurofibromatosis (Von Recklinghausen's disease).

5. Child presents with dark purple lesion not raised above the surface. Pressure causes blanching of the color. Mother says that it's present since birth.

Port wine stain.

6. Adult male presents with slowly growing painless subcutaneous swelling with black spot. On squeezing it discharges sebum.

Sebaceous cyst.

7. Female patient around 20 years old presents with a slowly growing painless swelling at the lateral side of the upper part of the neck protruding beneath the anterior border of sternomastoid.

Branchial cyst.

8. An adult male presents with painless swelling mostly at the dorsum of the hand, tense, cystic, rounded related to a tendon and its mobility decrease by pulling on the tendon.

Simple ganglion.

9. Newborn presents with large single cystic swelling at posterior triangle of the neck. Trans-illumination test is positive.

Cystic hygroma.

10. Patient presents with cystic, bluish, translucent swelling with prominent blood vessels on its surface on the floor of the mouth.

Ranula.

SALIVARY GLANDS

1. Adult male C/O of painful swelling in the site of the face, ↑ with lemon ingestion.

Acute Bacterial sialoadenitis.

2. Adult male presented with painless slowly growing swelling in the side of the face elevating lobule of the ear. On examination the swelling is irregular, lobulated, freely mobile, no cervical LN enlargement.

Pleomorphic adenoma.

SWELLINGS AND SALIVARY GLANDS QUESTIONS



QUESTION
Bank!!
as2elet el seneen ?

- Give an explanation : Stones of the Parotid salivary gland are rare and less common than those of the submandibular salivary glands

(Kasr: 2007)

- Salivary neoplasms

(Kasr: 2011)

- Management of salivary stones

(Azhar F: 2009)

- Management of parotid abscess

(Kasr: 2008)

- Lipoma : Types, Diagnosis, TTT

(Kasr: 2008, Ain shams: 2004, Azhar M: 2002)

- sebaceous cyst : Complications, Pathology, Management

(Kasr: 2007, Ain shams: 2005, Azhar F: 2007, 2004)

- Dermoid cyst

(Azhar F: 2006, Azhar F: 2004)

- Cystic hygroma

(Ain shams: 2008)

- Neurofibromatosis

(Ain shams: 2008)





SURGI- TOONS

SURGICAL INFECTIONS



Michael Safwat
MBBCh - Ain shams university

SCHEME FOR: WRITTEN QUESTIONS SURGICAL INFECTIONS

⊖ Definition

⊖ Etiology (Org, PDF, Route)

- ♣ Organism
- ♣ Predisposing factors
- ♣ Route of infections

⊖ Pathology

- ♣ Site
- ♣ Pathogenesis

⊖ C/P (Symptoms, signs)

	SYMPTOMS	SIGNS
General	FAHM	HECTIC fever , Tachycardia
Local	▪ Pain: Dull aching then Throbbing ▪ Swelling of tissues ▪ Loss of function	▪ Swelling → Hot, red ,tender ▪ LNS → Enlarged, elastic, tender, Mobile ▪ Special signs

⊖ Complications

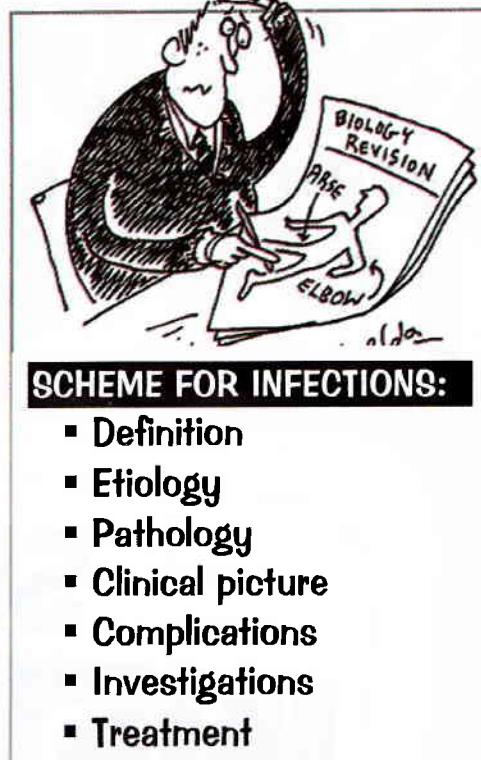
- ♣ General → Bacteremia, septicemia, Pyemia, Toxemia
- ♣ Local: Chronicity, Pus locus, Spread

⊖ Investigations

- ♣ CBC → Leucocytosis in most of infections
- ♣ C/S
- ♣ Plain X-ray
- ♣ Investigations according to site...

⊖ Treatment

- ♣ General → R.A.A.A... Rest, Analgesics, Antipyretics, Antibiotics (AUGMENTIN)
- ♣ Local
 - Hot Fomentation
 - Active treatment:



ACUTE ABSCESS

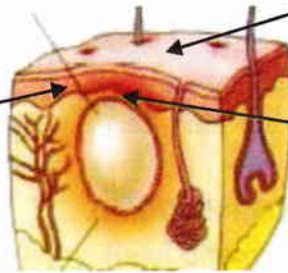
⊖ Definition ... Localized suppurative inflammation

⊖ Etiology (Org, PDF, Route) :

- ♣ SKIN, NECK ABSCESS → Staph (coagulase +ve), ABDOMINAL ABSCESS → EColi.
- ♣ PDF → Bad general condition, Stasis, Bad hygiene
- ♣ Route → Direct, Blood, Lymphatics, through natural passages.

⊖ Pathology :

Intermediate zone → معركة دائرية
Granulation tissue



Peripheral zone → إمدادات
Hyperemia

Central zone → مقبرة جماعية
Micro-organism + dead WBCs

⊖ CP (Symptoms, signs)

	SYMPTOMS	SIGNS
General	FAHM	HECTIC fever, Tachycardia
Local	▪ Pain : Dull aching → Throbbing, ↓ by elevation of the part ▪ Swelling of tissues ▪ Loss of function	▪ Swelling → Hot, red, tender ▪ LNS → Enlarged, elastic, tender, Mobile ▪ FLUCTUATION is LATE

Late fluctuation

- ⊖ Breast
- ⊖ Prostate
- ⊖ Parotid
- ⊖ Perineum
- ⊖ Pulp space

Special signs according to type :

Breast, brain (↑ICT), Lung (pus on postural drainage),
Liver, peri-nephric, Sub-phrenic, cold abscess

⊖ Complications :

- ♣ General → Bacteremia, septicemia, Pyemia, Toxemia
- ♣ Local :
 - ⊖ POINTING & RUPTURE after 2-3 days
 - ⊖ ANTIBIOMA
 - ⊖ Chronicity, Spread, Sinus, Fistula

ANTIBIOMA

- ⊖ NOT a tumor but It's a chronic abscess
- ⊖ Common in breast
- ⊖ If sterile pus is formed → NOT drained

⊖ Investigations :

- ♣ CBC → Leucocytosis
- ♣ C&S
- ♣ Plain X-ray, CT scan, MRI
(According to site of abscess)

⊖ Treatment:

- ♣ TTT. Of Predisposing factors
- ♣ General → Rest, AAA (Augmentin)
- ♣ Local

- Rest, Hot Fomentation
- Incision & Drainage
- If Amoebic liver abscess, Brain, Cold abscess → Aspiration
- Chronic abscess: If Thin walled → Incision & drainage, If Thick walled → Excision

:: INCISION & DRAINAGE ::

- ⊖ Under general anesthesia
- ⊖ Incision → (long, dependent, never cross a skin crease, parallel to important Structures)
- ⊖ Introduce finger to break ALL septae
- ⊖ Packing for 48 hours
- ⊖ Dressing every day until complete healing
- ⊖ For important structures → **HILTON'S TECHNIQUE**

NON SUPPURATIVE INFLAMMATION CAUSED BY STREPT.

	CELLULITIS	ERYSIPELAS
	Non suppurative infection of Loose Connective tissue أحمر نبيتي و ملهوش حدود	Non suppurative infection of Superficial Lymphatic vessels أحمر دم الغزال و حدوده واضحة كأنه مرسوم بالقلم
Symptoms	GENERAL→FAHM LOCAL→Pain, swelling, disturbance of function	
Local Signs	○ Tender ○ Dusky red ○ Hot area with indurated edge ○ ill-defined edge	○ Firy red swelling in face & extremities ○ Well Defined edge
Complications	♣ Post-strept GN (after skin inf.) ♣ Scarlet fever ♣ SIRS (COMMON COMPLICATIONS) ♣ Lymphedema, Rheumatic heart	♣ Septicemia ♣ Facial erysipelas→ Cavernous sinus thrombosis ♣ Recurrence→ Block lymphatics
Treatment	AAA + Rest + Hot fomentation	
	Antibiotic → PENICILLIN (If no response >48 hrs→suspect abscess) (Give Erythromycin if Pt. is allergic)	Patient is isolated (As disease is highly contagious)

BOIL (FURUNCLE)

- Infection of **Hair follicles** → Perifolliculitis
- **ORGANISM:** Staph. Aureus ..(→Necrotoxin)
- **COMPLICATIONS :**
 - **CAVERNOUS SINUS THROMBOSIS** نفذه لك متفصهوش
 - **BLIND BOIL** دمل متفصهوش (Boil subsides leaving thick indurated area)
- **TREATMENT**→ Improve general condition (Control DM, nutrition, Vitamins) + AAA + Rest, fomentation
- Antibiotics → Flucloxacilin or(Augmentin)

CARBUNCLE INFECTIVE GANGRENE OF NAPE

- **ORGANISM:** Staph aureus→ Necrotoxin →Infection of SC tissue
- **PDF:** More common in patients with **D.M .**
- **SITE:** Most common site is **NAPE OF NECK**
- **PATHOLOGY:** Infection starts in hair follicle→ Spreads to SC tissue→Loculated abscess → Each burst on Surface individually
- **CLINICAL PICTURE:** Multiple pustules appear on surface →**CRIBRIFORM APPEARANCE**
- **COMPLICATIONS:** Chronicity, CAVERNOUS SINUS THROMBOSIS
- **TREATMENT:** - Rest, AAA (Flucloxacilin), Improve general condition
- If Pus is formed:
 - Cruciate incision& Debridement of necrotic tissue
 - Glycerine Mg sulfate till sloughing occurs
 - Dressing until healthy tissue is formed
 - Skin Graft



LUDWING ANGINA

DEFINITION:

- Bilateral diffuse Cellulitis of floor of mouth & pharynx

ORGANISM:

- Mixed infection (e.g. STREPT... mouth commensals)

ROUTE OF SPREAD:

- Due to Direct spread from infected teeth, Ulcers of tongue or submandibular sialoadenitis

CLINICAL PICTURE:

- C/O → Severe dysphagia & Dyspnea, suffocation
- O/E:
 - CERVICAL: Swelling in submandibular region
 - PHARYNGEAL: Edema, Tongue is pushed upwards & Backwards

TREATMENT:

- EARLY → massive doses of Antibiotics (Amoxicillin, Metronidazole), Rest in semi-sitting position
- SUBMENTAL CURVED incision of skin & Deep fascia
- TRACHEOSTOMY if needed



**SURGICAL
EMERGENCY**

INGROWN TOE NAIL (ONYCHO-CRYPTOSIS)

DEFINITION:

- Necrosis of a nail edge which is embedded in skin & SC tissue of nail sulcus

ETIOLOGY & PATHOLOGY:

- Site : BIG TOE
- Etiology : Faulty nail trimming, wearing tight shoes, Nail abnormalities as Hypercurved nail)

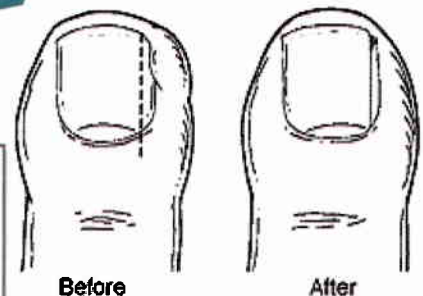
TREATMENT:

CONSERVATIVE

- Gauze soaked in anti-septic to separate Nail from Nail bed
- Correct trimming (square trimming)
- Avoid tight shoes
- Keep foot clean & dry

OPERATIVE

- DEFINITIVE TREATMENT → WEDGE EXCISION
- Excision of Nail with periosteum
- If Heavily infected → Left to heal by 2ry intention



	TETANUS	GAS GANGRENE
Definition	Acute specific infection leading to ↑ nervous excitation due to release of neurotoxin.	Acute specific infection leading to spreading of gangrene with excess gas formation
Organism	<u>Clostridium Tetani :</u> ▪ Gram +ve ▪ An-aerobic ▪ Spore forming ▪ <u>DRUM STICK appearance</u> ▪ Secretes Neuro-toxin	<u>CL. WELCHII (Saccharolytic) ,</u> <u>CL. HISTOLYTICUM (Proteolytic) :</u> ▪ Gram +ve ▪ An-aerobic ▪ Spore forming ▪ Secretes Alpha-Toxin
PDF	▪ ↑ organism content → Contamination in field & streets هنادى ▪ ↓ O₂ content → Deep lacerated wounds, Ischemic limb, shock, Compartmental \$ ▪ Lack of proper sterilization of cat gut & instruments مصانع عبد الناصر	
Route	1) WOUNDS, endogenous 2) Post-operative tetanus 3) Tetanus Neonatorum	
Pathology:	<u>Organism release EXOTOXIN:</u> ▪ ANTI-CHOLINE ESTERASE → Tonic rigidity of muscles at NMJ ▪ ↑ Excitability of motor neurons at AHC → Clonic contraction ▪ LOCAL → Minimal inflammatory reaction.	▪ <u>SACCHAROLYTIC GP. →</u> acts on CHO of dead muscles → Gases → Elevate sarcolemma → Cut blood supply ▪ <u>PROTEOLYTIC GP. →</u> acts on Proteins → Ammonia → H₂S → mix with Iron of Hb → IRON SULPHIDE "Black color, Bad odour" ▪ <u>GENERAL → RBC hemolysis, degeneration</u>
C/P.. IP SYMPTOMS	1-21 days ▪ General → FAHM (low grade fever except during convulsions) ▪ Local → pain, swelling, disturbance Of function (Convulsions)	1-2 days ▪ General → FAHM (slight fever or even subnormal temperature) ▪ Local → Pain, Black swelling with offensive odour, loss of function
SIGNS	GENERAL: Stage of tonic contraction : Trismus , Risus sardonicus, Opisthotonus, dysphagia, dyspnea, stridor Stage of Clonic contractions: Clonic Spasm on top of tonic spastic muscles LOCAL → Red, hot , tender wound	GENERAL: Tachycardia , Jaundice, MOF LOCAL: ▪ Wound crepitus, Black color, foul odour (Burnt sweet or Spoiled eggs) ▪ Sutures appear after tension ▪ Loss of sensation & Ms. contraction
Complications	MORTALITY 45% ▪ Hyperpyrexia , Exhaustion ▪ Asphyxia, Respiratory failure & HF	MORTALITY >25% Lecithinase is the most dangerous toxin Severe toxemia, MULTI-ORGAN FAILURE
Investigations	▪ Smears from Wounds → organism ▪ Organ profile, ABGs ▪ CBC → Leukocytosis ▪ CSF → Normal ▪ SPATULA TEST .. bed-side test	▪ CT, MRI (THE BEST) ▪ TLC → Leucopenia, anemia ▪ ↑ Bilirubin ▪ Smear from discharge ▪ Plain x-ray → Tissue gases

TREATMENT OF TETANUS

PROPHYLAXIS

MANAGEMENT OF WOUND:

- 1) Skin incision
- 2) Open Deep fascia
- 3) Ms. Debridement
- 4) Wash with H₂O₂
- 5) If <8 hrs → Close skin loosely without deep fascia
- 6) If >8 hrs, excess necrotic tissue or heavily contaminated → wound is left opened

SPECIFIC

IMMUNE

Patients who is previously immunized in the last 10 years
↓
Give Booster dose of tetanus toxoid (0.5 ml IM)

NON-IMMUNE

TIDY

TETANUS TOXOID

- 1) Initial dose (0.5 ML)
- 2) 2 doses given with 4 weeks interval

COMPLETE IMMUNIZATION COURSE

UNTIDY

- Tetanus toxoid
- TIG (250 units IM)
- Complete immunization course
- antibiotics

CURATIVE

GENERAL:

- 1) Resuscitation & Monitoring
- 2) Isolation in dark room, Nutrition by NG tube
- 3) RESPRATORY PROBLEMS → O₂, tracheostomy
- 4) In severe cases → **VENTILATOR**

SPECIFIC:

- 1) **Anti-tetanic IG**... Injected in the proximal portion of wound extremity → Neutralizes circulating toxin
- 2) **Penicillin ... 10-40 million units/day**

FOR COMPLICATIONS:

- Control of convulsions by Valium, barbiturates
- In severe cases → **VENTILATOR**
- Control of Hyperpyrexia by Cooling

TETANUS VACCINE

- Vaccination by DPT
- 2,4,6 months
- Booster at 18 muscless
- HRG should be vaccinated every 5 years

TREATMENT OF GAS GANGRENE

PROPHYLAXIS

MANAGEMENT OF WOUND:

- 1) Skin incision
- 2) Open Deep fascia
- 3) Ms. Debridement
- 4) Wash with H₂O₂
- 5) If <8 hrs → Close skin loosely without deep fascia
- 6) If >8 hrs, excess necrotic tissue or heavily contaminated → wound is left opened

SPECIFIC

- Sterile instruments, sutures
- Isolation
- Polyvalent Anti-gas gangrene serum
- Antibiotics ... Penicillin G

CURATIVE

GENERAL:

- 1) Isolation
- 2) Resuscitation & Monitoring
- 3) IV fluids , Blood transfusion
- 4) Hyper-baric Oxygen

SPECIFIC:

- 1) **Anti-Gas gangrene IG**

It's the least important step

- 2) **Crystalline Penicillin...** 10 million IU/day

For complications:

- Massive type → High amputation above all affected muscles
- Localized type → excision of muscles, dusting wound with penicillin powder, drainage of wound

SURGICAL SITE INFECTION (SSI)

Definition: Non-specific infection that follow surgery or Hospital admission

ORGANISM

- ☒ Stah. aureus
- ☒ MRSA
- ☒ Sterpt.
- ☒ Enterococci
- ☒ Pseudomonas

PREDISPOSING FACTORS

GENERAL

- ☒ Age
- ☒ Obesity
- ☒ Malnutrition
- ☒ Immuno-compromization

WOUND

- ☒ Foreign bodies
- ☒ Ischemia
- ☒ Hematoma
- ☒ Untidy wounds

OPERATION

- ☒ Poor tech.
- ☒ Long time

CLINICAL PICTURE

	SYMPTOMS	SIGNS
General	FAHM	HECTIC fever , Tachycardia
Local	▪ Pain ▪ Swelling ▪ Disturbance Of function: DELAYED HEALING within 10 days	▪ Wound : red, hot, tender, with oozing pus ▪ LNs : Enlarged, tender, elastic, mobile

CRITERIA OF DIAGNOSIS

- ⊖ Infection < 30 days after surgery
- ⊖ Involve skin & SC only
- ⊖ Purulent **DISCHARGE**
- ⊖ Isolated Organism

INVESTIGATIONS

- ☒ CBC → Leucocytosis
- ☒ C & S

CLASSIFICATION

CLASS I	Clean wound	▪ Non-traumatic wound in GIT, urinary, Respiratory tract ▪ Risk of SSI < 2%
CLASS II	Clean contaminated	▪ Surgery into tracts with No significant spillage ▪ Risk of SSI 2-5 %
CLASS III	Contaminated	▪ Open accidental wounds , Gross spillage from GIT ▪ Risk of SSI 10-20%
CLASS IV	Dirty wounds	▪ Traumatic wounds > 4 hours, Perforated viscus accompanied by high degree of contamination ▪ Risk of SSI up to 40%

TREATMENT

- ☒ NO Prophylactic antibiotics in clean surgery
- ☒ IN CLEAN CONTAMINATED → Antibiotics are given 30 min. before skin incision & Repeated intra-operative with insertion of FB (e.g. Mesh)
- ☒ IN DIRTY WOUND → Antibiotics are Curative
- ☒ CURATIVE TREATMENT OF WOUND INFECTION:
 - Drain, antibiotics, Daily dressing

HAND INFECTIONS

SCHEME FOR WRITTEN QUESTION



⊖ Definition

⊖ Etiology (Org, PDF, Route)

- ♣ Organism: **STAPH. (80%)**
- ♣ Predisposing factors → bad hygiene, bad general condition, manual working, housewives
- ♣ Route of infections **DIRECT**

⊖ Pathology

- ♣ Site
- ♣ Pathogenesis

⊖ CP (Symptoms, signs)

	SYMPTOMS	SIGNS
General	FAHM	HECTIC fever , Tachycardia
Local	▪ PAIN: - Dull aching → Throbbing (pus) - ↓ by elevation of hand ▪ SWELLING: according to site.. - Edema at dorsum of hand - Pulp space → distal phalynx - Acute paronychia → Nail fold ▪ DISTURBANCE OF FUNCTION: - Limited mobility	▪ SWELLINGS: - Hot, red ,tender - Diffuse edema maximum at dorsum of hand ▪ LNS: - Enlarged, elastic, tender, Mobile Axillary LNS ▪ Special signs:

⊖ Complications

- ♣ General → Bacteremia , septicemia , Pyemia , Toxemia
- ♣ Local : According to type of infection :
 - ✓ Pulp space infection → Thrombosis, Osteomyelitis
 - ✓ Acute paronychia → Subungual abscess

⊖ Investigations

- ♣ If FB is suspected → X-ray
- ♣ If recurrent → Blood sugar for DM

⊖ Treatment

BEFORE SUPPURATION

- ♣ General → Rest, analgesics, antipyretics, antibiotics , Hot Fomentation
- ♣ Local → **Position :**
 - a) Position of rest
 - b) Position of exercise if stiffness

AFTER SUPPURATION

Incision and drainage

- 1) General anesthesia
- 2) Bloodless field
- 3) Incision at site of selection (never cross skin crease, avoid midline incision in digits)
- 4) Remove pus
- 5) NO DRAINS → Tull grass
- 6) Dry dressing changed after 1st day, then every 2 days

PARONYCHIA

ACUTE PARONYCHIA

CHRONIC PARONYCHIA

DEFINITION:

Infection of tissues surrounding Nail bed

MOST COMMON HAND INFECTION (30%)

	ACUTE PARONYCHIA	CHRONIC PARONYCHIA
ETIOLOGY: - Organism - PDF	Bacterial Bad trimming of Nail Thorn driven under nail الشوك الذي في الورد	Fungal Hands frequently emerged in water الرجل بتاع العصير
C/P: - Symptoms - Signs	General → FAHM Local → Swelling of Nail fold  General → Hectic fever, tachycardia Local → Nail bed is INDURATED... Cystic, yellow & U-shaped	Itching Nail becomes Whitish
COMPLICATIONS	SUB-UNGUAL ABSCESS	
INVESTIGATIONS		Culture on Sabouraud's agar
TREATMENT:	As Scheme + INCISION : - Oblique at the angle of nail Outer fold, excision of the ¼ of nail - If pus is all around nail → U-shaped nail - If sub-ungual abscess → Excision of the outer ¼ of Nail (V-shaped from the center of the free edge) 	☒ Dryness of hand ☒ Topical antifungal If failed : ☒ Nail fold is laid open & Nail Extraction

ACUTE SUBUNGUAL INFECTION

- DEFINITION:** Infection of space between subungual epithelium & their periosteum
- ETIOLOGY:** Prick beneath Nail
- CLINICAL PICTURE:**
 - Severe pain, Little swelling
 - Maximum Tenderness → Beneath free edge of Nail
- TREATMENT:** Removal of small "V" From center of free edge of Nail

PULP SPACE INFECTION

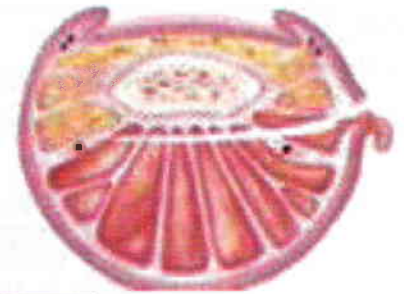
(FELON'S INFECTION)

SURGICAL EMERGENCY

ANATOMY:

Contents 3F.....

- 1) Fat
- 2) Fibrous septae → separating loculi ...
Abscess is Multi-loculated
- 3) Food: Digital artery → Thrombosis → Osteomyelitis of terminal phalynx except its epiphysis



⊕ Incidence: **2nd most common hand infection**

⊕ Etiology → Prick

⊕ CLINICAL PICTURE: as scheme +

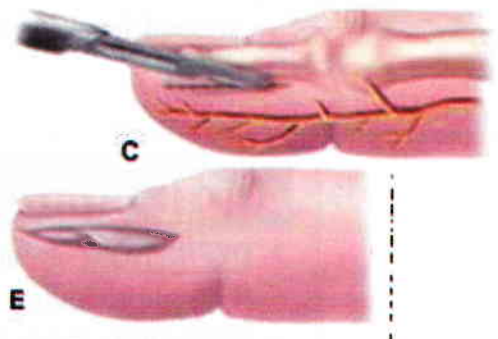
Distal phlaynx is first indurated → Cystic

⊕ Complications → **PARROT PEAK DEFORMITY**

Osteomyelitis of terminal phalynx except its epiphysis

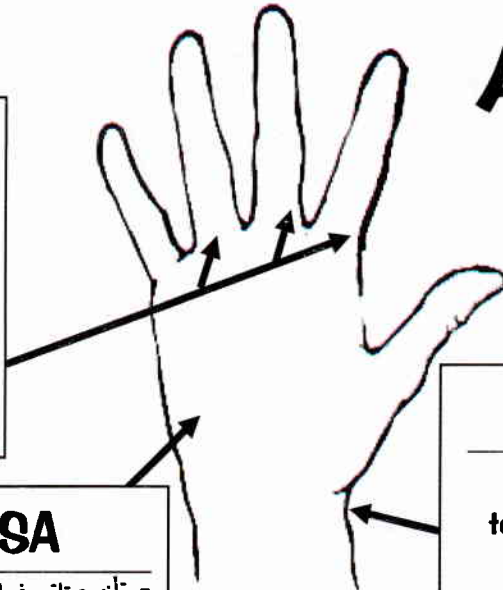
⊕ Treatment: As scheme +

- Anterolateral incision on lateral side of distal 2/3 of distal phalynx Or at point of maximum tenderness
- For severe cases → Counter incision
- For sequestrectomy → **HOOKEY STICK INCISION**



TENOSYNOVITIS OF MIDDLE 3 FINGERS

ANATOMY:



- كل واحد له synovial sheath لوحده موجود في عقلتيه.
- كل synovial sheath تبدأ من العقلة الثانية و PULP IS FREE
- قعر كل sheath في 3 أصابع المنتصف
- تهيئة من تحت و تدعى CULDOSAC

ULNAR BURSA

- تأخذ عقلتيه في الصبغة الصغير
- تدعى في ال Mid-palmar space
- تحوط ال flexor tendon بين ال 4 fingers Medial
- تمر تحت ال FLEXOR RETINACULUM و تروح ال
- FOREARM في ال Space of parona

RADIAL BURSA

- تأخذ عقلة في ال Thumb + ال Thenar space
- و تحوط tendon of flexor pollicis longus
- تمر تحت ال FLEXOR RETINACULUM
- تروح لا FOREARM في ال Space of parona

CLINICAL PICTURE: as scheme + ...

- 1) Tenderness over infected sheath Especially **CUL DE SAC**
- 2) **HOOK SIGN** (affected finger is semi-flexed with limitation of movement)
- 3) **SPECIAL SIGNS:**

ULNAR BURSITIS	RADIAL BURSITIS
1) Semiflexion & swelling of Little finger, medial side of palm, distal part of forearm 2) KANAVEL'S SIGN (Tenderness over infected bursae between transverse palmar crease & Hypothenar Ms.)	Semiflexion & swelling of Thumb, thenar eminence, distal part of forearm

COMPLICATIONS:

Sloughing of tendon, Adhesions, Osteomyelitis, arthritis

TREATMENT: As scheme +

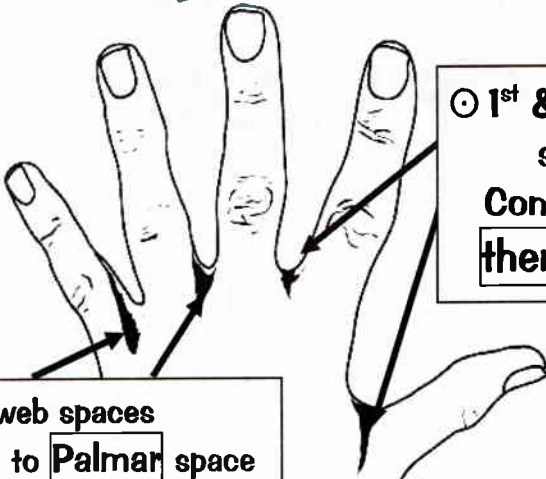
Transverse incision over proximal Cul de sac → Catheter → Betadine

- 1) **ULNAR BURSITIS** → Incision : Along radial border of Hypothenar eminence
- 2) **RADIAL BURSITIS** → Along Ulnar border of thenar eminence & Stop proximally 1.5 inch distal to the distal crease of wrist (to avoid injury of Motor branch of median N.)

WEB SPACE INFECTION

ANATOMY:

- Triangular region at base of fingers (Dorsal & Ventral surfaces)
- From Free border to palmar crease
- Contain fat, vessels, nerves, lumbricals & interossi.



- 1st & 2nd web spaces
Connected to **thenar** space

- 3rd & 4th web spaces
Connected to **Palmar** space

CLINICAL PICTURE:

As scheme +

- Swelling of web space
- **SIGN OF VICOTRY** .. fingers can't be approximated

COMPLICATIONS:

As scheme + Spread to deep mid-palmar space & adjacent web space

TREATMENT.

As scheme +

- **INCISION** → Transverse incision over web space 1 cm from free margin
- In severe cases → counter incision

PALMAR SPACE INFECTION

	SUPERFICIAL MID-PALMAR SPACE	DEEP MID-PALMAR SPACE
ANATOMY	○ Anterior → Palmar apponeuorosis ○ Posterior → Flexor tendons	○ Anterior → flexor tendon of medial 3 fingers ○ Posterior → Fascia covering interosseii ○ Lateral → fibrous band from palmar interosseii to 3rd metacarpal ○ Medially → fibrous band from palmar interossi to 5th metacarpal
CLINICAL PICTURE	As scheme + FROG HAND (Obliteration of palm concavity)	
COMPLICATIONS	COLLAR-STUD ABSCESS: ... 3 points ... 1- Sub-cuticular whitlow (loculus in SC tissue) 2- Loculus in superficial palmar space 3- Hole in palmar apponeurosis connecting them	
TREATMENT	▪ Incision: Transverse incision at line of crease over site of maximum tenderness ▪ HELTON's TECHNIQUE: Palmar fascia is divided longitudinally	▪ Incision: Transverse incision over space ▪ Position of function: semi-flexion of fingers ▪ If complicated by web space infection → Counter incision from web space



SURGICAL INFECTIONS:

1. Ideal antibiotic surgical prophylaxis should start before skin incision and continue for one day after surgery.
2. Indiscriminate use of antimicrobials can lead to the development of antibiotic resistant microorganisms.
3. The most important cause of post-operative wound infection is presence of dead space.
4. Fournier's gangrene is caused by bacteroids, califorms & peptostreptococci, but not clostridia.
5. Bacteroids are a part of normal flora of oropharynx, colon & vagina, but not urinary tract.
6. The main organism of endotoxin release in multiple organ dysfunction is E.coli.
7. The most common anaerobe in Colon is B. FRAGILIS
8. The most frequent cause of Endotoxic shock is E.Coli.
9. The most frequent organism associated with neck abscess in children is Staph. Aureus.
10. Adequate wound debridement is the most important measure in management of contaminated wounds.
11. Central venous pressure {CVP} may be decreased by Gram-negative sepsis.
12. CLOSTRIDIUM TETANI: has a drum stick appearance, is strict anaerobe, and Produces highly resistant spores.
13. A patient who has recovered from tetanus requires a dose of toxoid
14. Gas gangrene infection is caused by anaerobic spore-bearing clostridia, has a very short incubation period, Common to occur in deep wounds of the thigh, but not associated with high fever.
15. Treatment for clostridial myonecrosis (gas gangrene) includes Administration of Antitoxin, Wide debridement, and Administration of hyperbaric oxygen
16. The most lethal toxin of Cl. Welchii is LECITHINASE (α - toxin).
17. Foot infection in diabetic patients is predominantly caused by mixed organisms.
18. Midpalmar space infection is most often due to direct spread from intrathecal whitlows.
19. The hand infection which carries the highest risk of osteomyelitis is distal pulp space infection (felon).

SURGICAL INFECTIONS



1. Patient complaining of tender, dusky red hot, non suppurative area with indurated ill-defined edge at medial aspect of the leg. Inguinal LN are enlarged, elastic, tender, mobile.

Cellulitis.

2. Patient complaining of tender, dusky red hot, non suppurative area with indurated well defined edge at the face, slightly raised

Erysipelas.

3. Old patient complains of suffocation, severe dysphagia, and severe dyspnea. On examination edema of the floor of the mouth, the tongue is pushed upward and backwards.

Ludwig's angina.

4. Manual worker presents with swelling in nail bed. Dull aching pain. On examination nail bed is indurated yellowish cystic.

Acute paronychia.

5. Young male complaining of necrosis of the big nail sulcus with persistent irritation of his nail.

Ingrown toe-nail (Onychocryptosis).

6. Patient farmer presents with convulsion. The relatives give history to severe headache 12 hour ago. On examination the patient has a swollen wound and severe pain at site of wound.

Tetanus.

7. Patient presents with deep lacerated crush wound, the wound is black & edematous with foul odour and watery discharge.

Gas gangrene.

SURGICAL INFECTIONS:



- Discuss Aetiopathology , C/P and TTT of acute pyogenic abscess

(Kasr: 2011)

- Gas gangrene

(Azhar F: 2009- Ain shams: 2010)

- C/P and TTT of Tetanus

(Ain shams: 2011)

- Short account on : erysipelas

(Ain shams: 2009)

- Factors affecting wound healing, complications of wound healing

(Azhar M: 2009 - Azhar F: 2006, 2005 - Kasr: 2007 - Kasr: 2011)

- General principles in management of hand infection

(Azhar F: 2007, 2004 - Azhar M: 2008)

- Tenosynovitis of the fingers of the hand

(Ain shams: 2009)

- Management Pulp space infection

(Kasr : 2007)

- Detection of wound sepsis after surgery and its management

(Kasr: 2007)

TAKE YOUR
Notes!!

A cartoon-style illustration of a yellow notepad with a spiral binding on the left. A yellow pencil with a pink eraser is positioned diagonally across the top right corner of the notepad. The notepad has several lines of faint, illegible text on it.

SURGI- TOONS

TRAUMATOLOGY *and* BASIC SURGERY



Michael Safwat
MBBCh - Ain shams university

TRAUMA & SHOCK

TOPICS DISCUSSED IN THIS CHAPTER:

- Poly-traumatized patient
- Acute wounds
- Wound Healing
- Hemorrhagic shock
- Hemorrhage
- Septic shock
- Blood transfusion

TRAUMATOLOGY

INCIDENCE:

- ✧ Most common cause of death among middle aged patients
- ✧ 3rd Most common cause of death among all groups

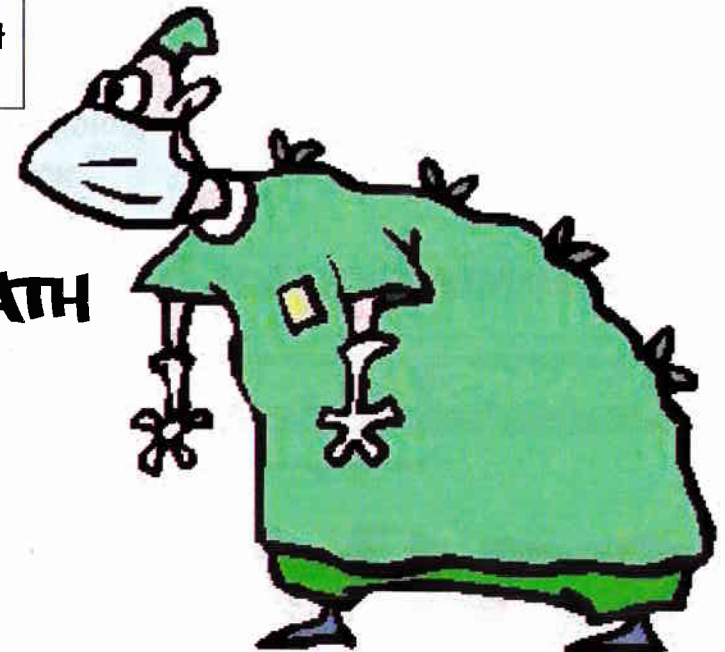
TRIAGE SYSTEM OF CLASSIFICATION:

RED	YELLOW	GREEN
Will die anyway whether they received medical attention or not	Will survive ONLY IF they received timely medical attention in the GOLDEN HOUR "first hour"	WILL survive anyway whether they received medical attention or not

If resources are limited → **YELLOW CODES** are treated first

TRIMODAL DISTRIBUTION ... CAUSES OF DEATH

IMMEDIATE	EARLY	LATE
Within minutes	Within hours	Within weeks
Due to injury to vital structures	Due to hemorrhage, or major fractures	Due to Sepsis, MOF





إسلامية

MANAGEMENT OF POLYTRAUMATIZED PATIENT

ATLS

PRE-HOSPITAL

ABCD

- ⊖ **A:** Airway patency & support mandible
- ⊖ **B:** Adequate breathing (look, feel, listen)
- ⊖ **C:** Circulation → Control any bleeding
- ⊖ **D:** Drugs "Analgesics"
- ⊖ Cover wound with sterile dressing
- ⊖ Avoid flexion of spine to avoid dislocations

PRIMARY SURVEY

ABCDE

- ⊖ **A:** Airway
- ⊖ **B:** Breathing
- ⊖ **C:** Circulation
- ⊖ **D:** disability
- ⊖ **E:** Exposure

SECONDARY SURVEY

HEAD TO TOE EXAMINATION

- ⊖ Head
- ⊖ Neck
- ⊖ Neurological ... **"GLASCOW COMA SCALE"**
- ⊖ Chest
- ⊖ Abdomen
- ⊖ DRE
- ⊖ Limbs

AMPLE HISTORY

- ⊖ Allergies
- ⊖ Medications
- ⊖ Past Medical History
- ⊖ Last Meal
- ⊖ Event of injury

URGENT INVESTIGATIONS AFTER BASIC LIFE SUPPORT

- ⊖ LAB : HB%, Glucose, KFT, ABGs , PO₂, PCO₂
- ⊖ RADIOLOGICAL : X-ray ,CT ,MRI ,U/S , Duplex
- ⊖ INSTRUMENTAL : Endoscopy, Centesis

		Assessment	Action
A	AIRWAY	☒ Is patient able to speak or not? ☒ Is airway patent or not ?	☒ Clear airway ☒ Protect airway by oropharyngeal airway , tracheal tube
B	BREATHING	Inspection – Palpation -Auscultation	☒ Needle decompression of tension pneumothorax
C	CIRCULATION	SHOCK (Hemorrhagic, cardiogenic, Neurogenic)	☒ Control bleeding ☒ Restore lost blood
D	DISABILITY	AVPU evaluation (Alert, vocal, Painful stimulation , Unresponsive)	
E	EXPOSURE	Resuscitation & monitoring ...	☒ Foley's Catheter ☒ NG tube ☒ Radiological assessment

THEN . . DEFINITIVE TREATMENT & REHABILITATION

GLASGOW COMA SCALE: "GCS"

EYE

بيفتح عينيه ولا لا ؟

VERBAL

بيستجيب للأصوات و الكلمات و لا لا ؟

MOTOR

حركات و تنفيذ أوامر

	1	2	3	4	5	6
Eyes	- ve	In response to painful Stimuli	In response to Voice	Spontaneously		
Verbal	- ve	Incomprehensible	Uttering	Confused	Oriented, Normal	
Motor	- ve	Extension to painful stimulus عكس الطبيعي De-cerebrated	Flexion to painful stimulus عكس الطبيعي De-corticated	Flexion + Withdrawal الطبيعي	Localize painful stimulus	Obey commands

Summation of 3 values & Interpretation:

- ☑ GCS 3 → Deep Coma & death
- ☑ GCS <9 → Severe, Endotracheal intubation is a must

RESPONSE TO TRAUMA

METABOLIC

EBB PHASE (<24 hours)

- ⊠ ↓Enzymatic activity & O₂ consumption
- ⊠ Lactic acidosis

CATABOLIC PHASE (3-10 days)

- ⊠ Fat, Protein mobilization
- ⊠ ↑Urinary Nitrogen excretion

ANABOLIC PHASE (10-60 days)

- ⊠ Restoration of Fat & Protein stores

RENAL

Oliguric Renal
failure

ENDOCRINE

↑Secretion

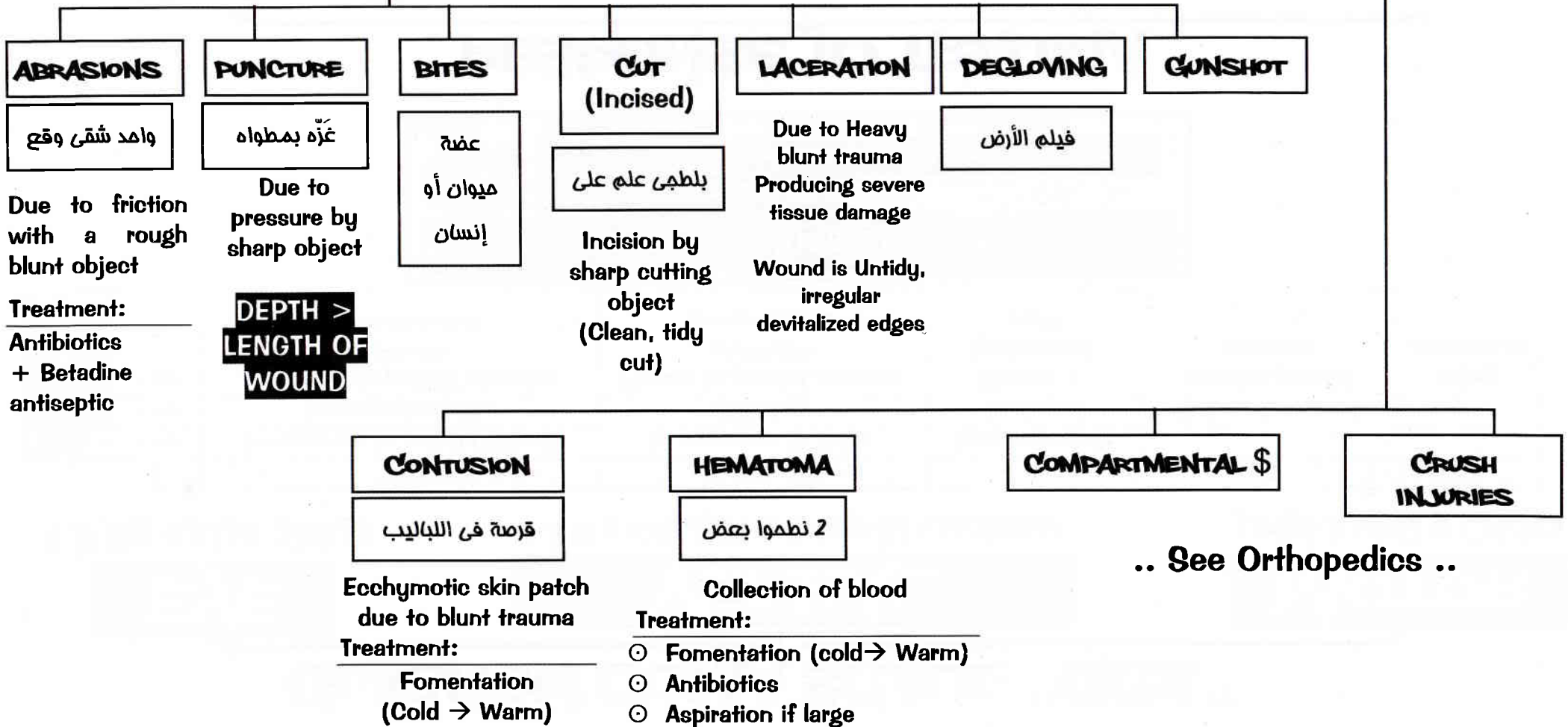
- ⊠ Aldosterone → ↑Na, H₂O reabsorption
- ⊠ CA → V.C., Tachycardia
- ⊠ ADH → H₂O retention
- ⊠ GH, Prolactin, ACTH

ACUTE WOUNDS

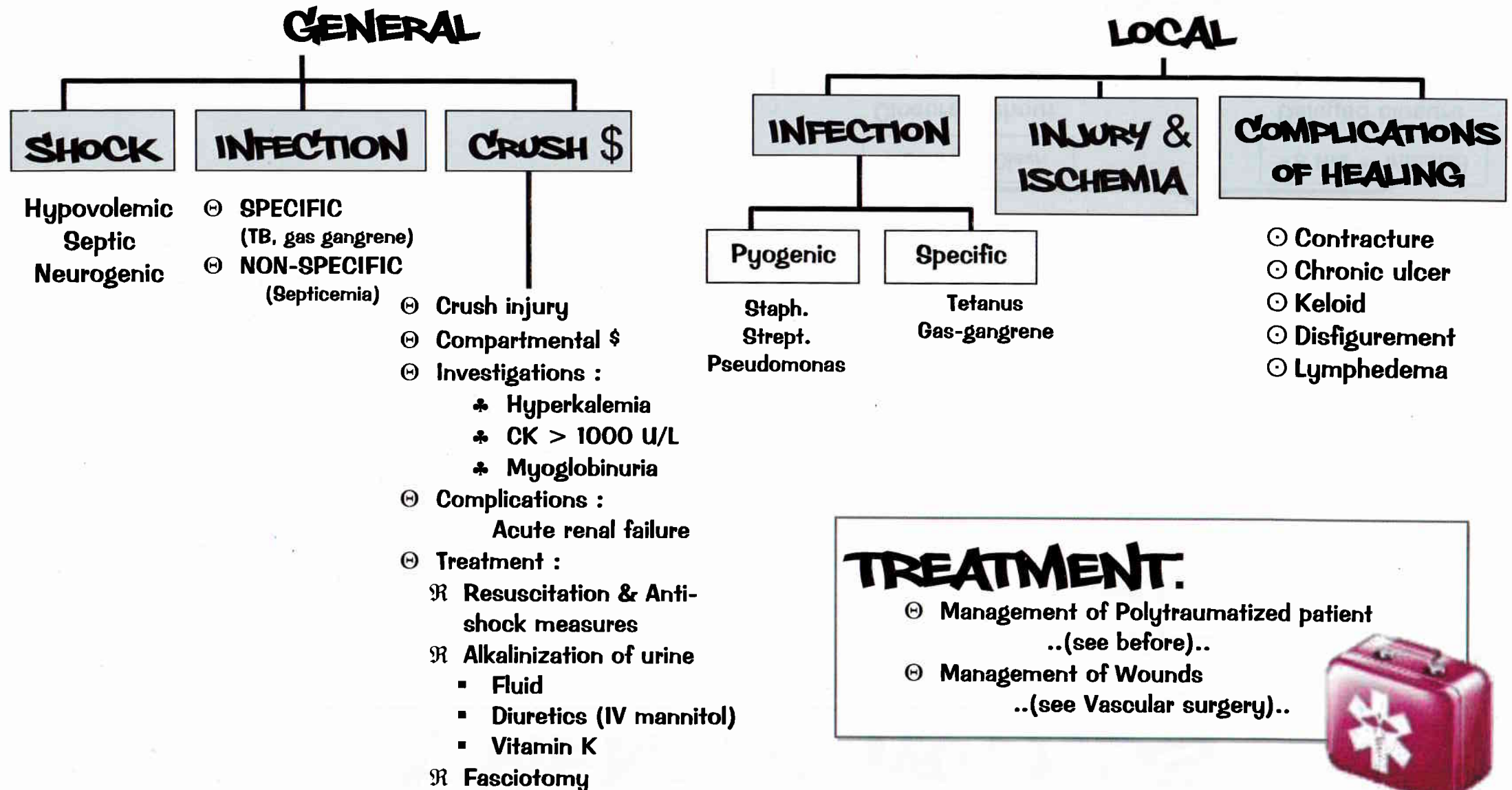
DEFINITION: Discontinuity of any body structure by Physical injury

OPEN WOUNDS

CLOSED WOUNDS



COMPLICATIONS OF WOUND



TREATMENT.

- ⊕ Management of Polytraumatized patient
..(see before)..
⊕ Management of Wounds
..(see Vascular surgery)..


TREATMENT OF WOUNDS

البيان

**POLYTRAUMATIZED
PATIENT**

- ⊖ PRIMARY SURVEY ... ABCDE ...
- ⊖ SECONDARY SURVEY
 - ♣ Examination from head to toe
 - ♣ Resuscitation
 - ♣ Investigations
 - ♣ Monitoring
- ⊖ SYSTEMIC THERAPY

الجرح
WOUND

⊖ IRRIGATION WITH SALINE

⊖ DEBRIDMENT

- ♣ Skin → Excision of 1-2 mm of edges
- ♣ Fascia → Fasciotomy
- ♣ Muscles → Excision of dead muscles
- ♣ Bones → Decontamination by curettage
- ♣ Nerve → Mark with black silk then delayed repair
- ♣ Blood vessels → (على حسب أهميته) Ligation or repair
- ♣ Skin closure → According to state of wound

<8 Hrs = Clean

Closure without
Tension

>8 Hrs = Infected

Delayed closure
or grafting

⊖ IMMOBILIZATION & POST-OPERATIVE CARE

- ♣ Observation
- ♣ Antibiotics
- ♣ Anti-tetanic serum
- ♣ Anti-Gas gangrene serum

WOUND HEALING

DEFINITION: Mechanism by which body restores integrity of injured part

TYPES

PRIMARY INTENTION: في المستشفى

- ⊖ tidy wounds, strong scars
- ⊖ Seals 1-2 days
- ⊖ Heals 1-2 weeks
- ⊖ Full power 3-6 Ms

SECONDARY INTENTION: طب الصحراء

- ⊖ Untidy wound with gapping edges
- ⊖ Weak scar
- ⊖ Takes much more time

TERTIARY INTENTION:

بفتح فتحة تصريف وبعدين أقفلها.

Wound is left open for 5 days then requires a delayed primary suture after being clean.

HEALING STAGES : x4

INFLAMMATORY PHASE (1st 4 days)

- ⊖ Vascular response (hemostasis + Vasodilatation)
- ⊖ Cellular response : **MQ is the main cell in healing** .
Following by Neutrophils, Mast cells

LAG PHASE (3rd -5th)

- ⊖ Endothelium, Collagen , MPs

PROLIFERATIVE PHASE (5th -21st)

- ⊖ Epithelial regeneration
- ⊖ Granulation tissue formation (healthy, unhealthy)
- ⊖ Connective tissue repair
- ⊖ Wound Contraction

REMODELING PHASE (> 1year)

- ⊖ Type III Collagen → Type I

N.B.

Wound
Contraction
حاجة حلوة
Wound
Contracture
حاجة وحشة

FACTORS AFFECTING HEALING

LOCAL

- ⊖ Type of wound (Tidy, untidy)
- ⊖ Site of wound
(Wounds over flexures → tension)
- ⊖ FB
- ⊖ Vascular insufficiency

GENERAL

- ⊖ Age of patient
- ⊖ Obesity
- ⊖ Medical conditions
- ⊖ Malnutrition
- ⊖ Medications
- ⊖ Smoking

COMPLICATIONS OF HEALING

EARLY

- ⊖ Infection, hematoma
- ⊖ Dehiscence

LATE

- ⊖ نظرية اللبن في الكاسارونة
- ⊖ Scars
- ⊖ Hypertrophic scars
- ⊖ Keloids
- ⊖ Marjolin ulcer

HEMORRHAGIC SHOCK

DEFINITION

State of peripheral circulatory failure due to sudden blood loss or shift from peripheral circulation.

ETIOLOGY

↓ Blood volume due to :

- ☑ Whole blood loss
- ☑ Plasma loss
- ☑ Water & electrolyte loss

STAGES

COMPENSATED

- ☑ Physiological mechanisms To restore blood volume
- ☑ Fail if blood Loss > 15%

DE-COMPENSATED

- ☑ Deterioration of functions of brain, kidney, Heart, lung
(If Treatment fails)

REFRACTORY

- ☑ Multi-organ failure

CLINICAL PICTURE

OF SHOCK

C/O:

- ☑ Weakness, fainting
- ☑ Patient feels Cold ,thirsty

O/E:

- ☑ Altered mental status
- ☑ ↓BP, Weak thread pulse, ↓PP
- ☑ Hypothermia
- ☑ Tachypnea, air hunger
- ☑ Skin becomes pale,
- ☑ Capillary refilling > 2sec
- ☑ Oliguria → Anuria & Renal failure

OF CAUSE

- ☑ External Hge
- ☑ Internal Hge
- ☑ Burns
- ☑ Intestinal obstruction

OF COMPLICATIONS

- ☑ Anuria
- ☑ ARDS

INVESTIGATIONS

AS A PART OF RESUSCITATION

ORGAN PROFILE

- ☑ Exclude bleeding tendency
- ☑ CBC, ABG, Electrolytes, PH, KFT, LFT

DETECT THE CAUSE

فین الدم ؟

- ☑ Abdominal US

COMPLICATIONS

- ☑ Head CT scan

TTT. OF HEMORRHAGIC SHOCK

FIRST AID

✧ ABCD

- ✧ Airway → patent
- ✧ Breathing → Maintained
- ✧ Circulation → Stop bleeding
- ✧ Drugs → Morphine to relieve neurogenic shock
- ✧ 3 ANTI - : Antibiotics, Anti-Gas gangrene, Anti-Tetanic serum

✧ FIRST AID

- ✧ Elevation of Legs .. **"TRENDLENBERG'S POSITION"**
- ✧ Immobilization of fractures
- ✧ Warming

At Hospital (ICU)

✧ STOP HEMORRHAGE

✧ RESUSCITATION:

- ✧ O₂
- ✧ RYLE → evacuate stomach
- ✧ LINE → 2 Cannulas for fluid replacement & Sampling

FLUID REPLACEMENT:

✧ Start with Crystalloids

Until blood typing, cross matching are done

- 1) Normal saline
- 2) Ringer(+K⁺)
- 3) Ringer lactate (+ Buffer)

N.B. :

- Crystalloids may be given alone → Pt. with Hypovolemia due to water & Electrolyte imbalance
- # Glucose 5% → leads to dilutional hyponatremia

✧ Colloids:

- 1) Plasma substitutes
- 2) Dextran

- ✧ Blood → in hemorrhagic Shock if HCT < 30 %

MONITORING

- ✧ Vital data
"Pulse, BP, Temp, Respiration"
- ✧ ABGs , ECG
- ✧ Urine Output
- ✧ Central venous Pressure
- ✧ Pulmonary artery wedge pressure
(**SWANZ GANZ CATHETER**) for early detection of Lt side HF in old patients.
- ✧ Arterial Line → Monitor ABP, assessment of ABG

SUPPORT

Cardiac support	Renal support	Respiratory support
✧ Dobutamine ✧ Digitalis	✧ Fluids ✧ Dopamine ✧ Mannitol (if no urine)	Mechanical ventilation

TTT OF CAUSE

- ✧ Injured vessel → surgical repair
- ✧ Burns → fluids, wound care

TTT OF COMPLICATIONS

- ✧ DIC → fresh frozen plasma

SECONDARY SURVEY

After stabilization..

HEMORRHAGE

Bleeding:

- ☑ Venous blood : dark, profuse
- ☑ Arterial Blood: red, spurting, oscillating
- ☑ Capillary Blood: red, oozing



According to time of Hemorrhage:

- ☑ Primary Hemorrhage : at same time of operation
- ☑ Reactionary Hemorrhage: within 24 hours
- ☑ Secondary Hemorrhage : within 7-14 days ... main cause is infection

Blood loss in Hemorrhage:

	CLASS I	CLASS II	CLASS III	CLASS IV
Blood loss	750 ml	750 -1500 ml	1500-2000 ml	>2000 ml
Pulse	<100	100-120	100-140	>140
Blood pressure	NORMAL	✧ Normal Systolic BP ✧ ↑Diastolic BP ✧ ↓Pulse pressure	✧ ↓Systolic BP ✧ ↓Diastolic BP ✧ ↓Pulse pressure	✧ ↓Systolic BP ✧ ↓Diastolic BP ✧ ↓Pulse pressure
Respiratory rate	14-20	20-30	30-35	>35
Urine (ml/hr)	>30	20-30	10-20	0-10
Capillary refill	NORMAL	>2 sec.	>2 sec.	---
How to restore lost blood ?	NO replacement	Replacement by Ringer lactate 3 times deficit	Ringer lactate + blood	Ringer lactate + blood



WHEN TO STOP BLOOD TRANSFUSION ?!

- ☑ Hematocrit 30 %
 - ☑ urine output 50ml/hour
 - ☑ CVP rises to the upper ½ of normal range
- If CVP is rising & Patient is NOT improving (Shock + ↑CVP)
 → search for:
- a) Tension pneumothorax
 - b) Cardiac tamponade
 - c) Heart failure

Treatment

1. Stop hemorrhage: (position - pressure - packing) e.g.
 - Elevation of the limb above the heart level , Balloon tamponade
2. Restore blood volume: According to the class of hemorrhage ...see before...
3. Optimize oxygen delivery: 40% oxygen is given for class II and 100% for classes III and IV.
4. General care of the patient: absolute bed rest and analgesia
 (Morphine is contraindicated in head injury and in cases of respiratory and liver insufficiency)
5. Monitoring:
 - Urine output, core temperature, hematocrit and cardiac monitoring
 - ECG for early detection of shock-induced arrhythmias is important).
 - In class III or IV hemorrhage → as above + CVP, ABGs and PH

SEPTIC SHOCK

"MOST SERIOUS TYPE OF SHOCK"

"MOST DIFFICULT TYPE TO BE TREATED"

ETIOLOGY:

- ☒ Organism: MOST COMMON ORGANISM IS GRAM -VE BACILLI
- ☒ Source of infection: Peritonitis, Cholangitis, UTI
- ☒ Predisposing factors: Extremes of Age, DM, Immune-compromisation, Malnutrition

CLINICAL PICTURE ... 2 PHASES ...

HYPERDYNAMIC PHASE (WARM PHASE)	HYPODYNAMIC PHASE (COLD PHASE)
▪ Restless & confusion ▪ SKIN → Flushed, warm, dry ▪ VITAL DATA: ✧ Fever >38 ✧ Tachycardia ✧ Tachypnea ▪ ↑COP	▪ SKIN → Cold, Clammy ▪ VITAL DATA: ✧ Oliguria ✧ Systolic BP <90 mmHg ✧ Tachycardia ✧ Tachypnea ▪ ↓COP

SIRS

(SYSTEMIC INFLAMMATORY
RESPONSE SYNDROME)

Etiology:

- ☒ **Septic shock**
- ☒ Poly-traumatized patient
- ☒ Major burn
- ☒ Acute pancreatitis
- ☒ Neglected hypovolemia

CRITERIA FOR DIAGNOSIS:

- a) Temp >38c , <36c
- b) HR >90 bpm
- c) RR >20 breath/min
- d) WBCs >12000 , <4000 /mm³

CRITERIA FOR DIAGNOSIS OF SEPTIC SHOCK

- ☒ Evidence of infection ... +ve Blood culture
- ☒ Refractory Hypotension
- + Any 2 criteria of the following ...
- ☒ Hyperventilation (RR >20 breaths/min)
- ☒ ABG (PCO₂ <32 mmHg)
- ☒ WBCs <4000- >12,000 cells/mm³

Complications:

80% MORTALITY

- ☒ MOF
- ☒ DIC



INVESTIGATIONS:

☒ FOR GENERAL CONDITION:

- ✧ CBC : ↑TLC, ↓ Platelets
- ✧ ABG, Electrolytes, Blood sugar

☒ FOR ETIOLOGY: Isolation of organism, C&S, Localization of septic focus

☒ FOR COMPLICATIONS: KFT, LFT, ECG, Coagulation profile

TREATMENT.. ADMISSION TO ICU THEN ...**RESUSCITATION****CIRCULATORY SUPPORT**☒ **FLUID REPLACEMENT:**

RINGER LACTATE

☒ **DRUGS**

(if Patient remains HYPOTENSIVE despite fluid replacement)

Dopamine, Dobutamine

REPIRATORY SUPPORT☒ **O₂ by mask**☒ **If P_{O2} < 60 mmHg**

→ Mechanical ventilation

RENAL SUPPORT

Hemodialysis in ARF

DIC → Fresh frozen plasma**ERADICATION OF INFECTION****MOST IMPORTANT STEP**☒ **Eradication of sepsis**☒ **Parenteral antibiotics****MONITORING**☒ **Vital signs**☒ **Urine output**☒ **ABGs, CBC,**

Coagulation profile

☒ **CVP, Arterial line**☒ **Prophylaxis against**

DVT, stress Ulcers

N.B.**PROGNOSIS: 80% MORTALITY****OTHER TYPES OF SHOCK..****CARDIOGENIC SHOCK**☒ **MOST COMMON CAUSE IS MYOCARDIAL INFARCTION****CLINICAL PICTURE:**

CONGESTED NECK VEINS + ↑CVP

TREATMENT :☒ **TTT of the cause**☒ **Dobutamine (inotropic agent)****NEUROGENIC SHOCK****ETIOLOGY:**

- High spinal anesthesia,, Transaction of spinal cord

CLINICAL PICTURE:

- BRADYCARDIA
- WARM SKIN
- LOW BP

☒ **Most important treatment of Anaphylactic shock is IV hydrocortisone**☒ **Most important causes of Endocrinal shock : DKA, Addison, Myxedema**☒ **Any prolonged hypovolemic shock → septic shock**☒ **Any prolonged hypovolemic shock in elderly → cardiogenic shock**

BLOOD TRANSFUSION

- ✓ **MOST SERIOUS COMPLICATION IS INCOMPATIBILITY REACTION**
- ✓ **PLATELETS** survive in stored blood from **1 DAY**
- ✓ Blood group mismatching can be accepted in **LIVER** transplantation
 - Donor & recipient are only matched for ABO compatibility
- ✓ All components for stored whole tend to ↓ overtime except Potassium
- ✓ Donated blood should be routinely screened for Hepatitis B, C, HIV
- ✓ CMV is screened in high risk groups (Ex: IC patients)
- ✓ Best guide for blood transfusion in hemorrhagic shock is " CVP "



COMPLICATIONS OF BLOOD TRANSFUSION

SINGLE

FEBRILE REACTION:

- ☒ **Most common complication**
- ☒ TTT : stop transfusion, Anti-histaminic, Hydrocortisone

ALLERGIC REACTION:

- ☒ C/P: urticarial patches up to laryngeal edema.
- ☒ TTT: Antihistaminics & cortisone, stop the transfusion.

HEMOLYTIC REACTION:

- ☒ ETIOLOGY: Incompatible blood transfusion
- ☒ CLINICAL PICTURE:

In conscious patient

Symptoms	Signs
▪ Fever & rigors ▪ Chest, lumbar pain. ▪ Dyspnea. ▪ Headache. ▪ Nausea, Vomiting	▪ Fever & rigors. ▪ Hypotension, Tachycardia. ▪ Cyanosis. ▪ Oliguria. ▪ Renal failure.

If patient is under anesthesia or comatosed

Incompatibility is suspected by:

- Bleeding tendency (oozing of blood) **"Most important"**
 - Progressive unexplained hypotension, Tachycardia.
- ☒ **TREATMENT:**
- Stop the transfusion immediately.
 - IV fluid(ringer lactate+ corticosteroid).
 - Alkalinization of urine by NaHCO₃
 - Mannitol 20% 100 ml (forced alkaline diuresis).
 - Repeat patient's blood typing & matching.

NON -IMMUNOLOGICAL

Complication of massive blood transfusion

- Acidosis, Hyperkalemia, Circulatory overload, Hypothermia, Citrate toxicity, Bleeding tendency

2-Air embolism.

3-Thrombophlebitis at the site of injection.

4-Complication of transfusion of stored blood

Acidosis, Hyperkalemia, ↑ O₂ affinity

MASSIVE

Transfusion of 2500ml of blood at one time or 5000 ml or more over 24 hours

IMMUNOLOGICAL

- ☒ Delayed hemolysis
- ☒ Post-transfusion purpura

II-Non-IMMUNOLOGICAL:

- ☒ a-Iron overload (Hemosiderosis).
- ☒ b-Transmission of diseases as:
 - AIDS.
 - Brucellosis.
 - CMV (The MOST COMMON)
 - Malaria(only by RBCs)
 - Viral hepatitis.
 - Syphilis.

INDICATIONS OF BLOOD TRANSFUSION:

- ☒ **WHOLE BLOOD:** Hemorrhage, operative replacement, severe burns
- ☒ **PACKED RBCs:** severe anemia
- ☒ **PLATELETS:**
 - 1st or 2nd thrombocytopenia, platelet dysfunction
- ☒ **FRESH FROZEN PLASMA:**
 - burns, malnutrition, coagulopathies
- ☒ **CRYOPRECIPITATE:**
 - hemophilia, DIC, VWD
- ☒ **FIBRINOGEN:** DIC
- ☒ **LEUCOCYTES:** Severe leucopenia, Agranulocytosis

BASIC GENERAL SURGERY

TOPICS DISCUSSED IN THIS CHAPTER:

- Hemostasis
- Bleeding disorders
- Body Water
- Sodium, Potassium, Calcium
- Acid base balance
- Nutrition (Enteral, TPN)
- Post-operative complications

HEMOSTASIS

Common pathway:

- ☑ Factor 1, 2, 5, 10, 13
- ☑ Assessed by PT, PTT

Extrinsic pathway:

- ☑ Factor 7
- ☑ Assessed by PT
- ☑ Affects Oral anti-coagulants
- ☑ Prolonged in Liver disease, Vitamin K malabsorption (obstructive jaundice)

Intrinsic pathway:

- ☑ 8, 9, 11, 12
- ☑ Assessed by PTT
- ☑ Affects Heparin

- ☒ Half-life of factor 8 is 8 hours
- ☒ Most common cause of defective hemostasis is Thrombocytopenia

- ☑ Vitamin K is essential for activation of Factor 2, 7, 9, 10

They are prolonged in Liver disease, Vitamin K mal-absorption (obstructive jaundice)

- ☑ Coumadin effect can be reversed by Vitamin K,
- ☑ Anti-thrombin 3, Protein C, S, Factor 5 leiden have anti-coagulant effect
(Measured in a recurrent DVT in a young patient)

HOW TO EVALUATE BLEEDING DISORDERS

Bleeding time (N: < 8 min)	Platelets disorder or vascular abnormality
Prothrombin time (N: 12-15 sec)	extrinsic pathway الصغير برة
Partial thrombo- plastin time (N: 30-40 sec)	Intrinsic pathway الكبير جوه

HEPARIN:

- ↑BT (platelets), ↑PTT (intrinsic)

LMW heparin "CLEXAN"

- Long acting
- acts on factor Xa
- Given once daily
- Eliminated via kidneys
- Causes no bleeding tendency: NORMAL PTT (better in prophylaxis)



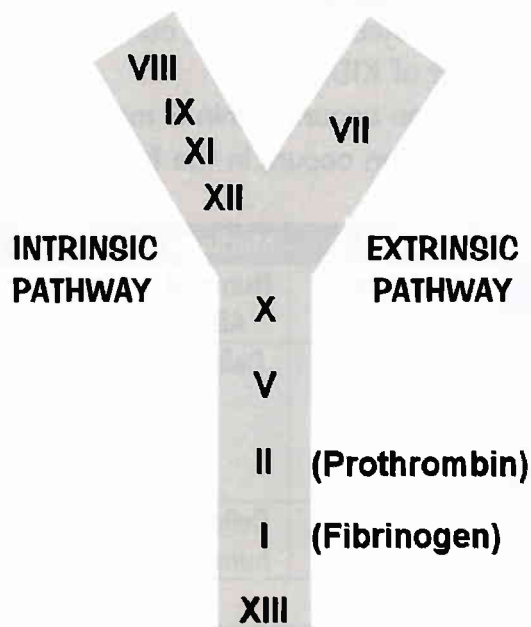
WARFARIN

- Reduce the concentration of Vitamin K dependent clotting factors
- Half-life : 36 hours
- Crosses the placenta (Should be avoided in pregnancy)
- Doses should be reduced in Liver disease
- Controlled by INR (about 2-3 times double the normal value)

CLOTTING CASCADE:

- INTRINSIC PATHWAY
- EXTRINSIC PATHWAY

INTRINSIC PATHWAY	EXTRINSIC PATHWAY
Within few minutes	Within few seconds
Controlled by PTT	Controlled by PT



BLEEDING DISORDERS

HEMOPHILIA A,B

- ✓ Deficiency of factor 13→ A , Factor 9→ B
- ✓ Sex linked
- ✓ Earliest manifestation: Bleeding during circumcision
- ✓ Post-traumatic bleeding (e.g. Hemo-arthritis)
- ✓ INVESTIGATIONS: value of factor = 5-20% Normal value
- ✓ TREATMENT: Infusion of deficient factors, FFP, Cryoprecipitate
:: AVOID Aspirin, NSAIDS, IM Injections ::

Most important step if you suspect Bleeding tendency is GOOD HISTORY TAKING

VWD

- ✓ Deficiency of Factor 8 , Autosomal dominant
- ✓ CLINICAL PICTURE: Echymosis, Purpura, Bleeding from orifices
- ✓ INVESTIGATIONS: ↑BT, ↑PT, ↑PTT, Deficiency of factor 8
- ✓ TREATMENT: Infusion of Deficient VW factor

DIC

- ✓ Most common cause : SEPTICEMIA
- ✓ CLINICAL PICTURE: PARADOX.. Thrombosis But bleeding may occur
- ✓ INVESTIGATIONS:
 - ↓Platelets, ↑PT,PTT, ↓Fibrinogen, ↑FDPs
- ✓ TREATMENT: TREATMENT OF UNDERLYING CAUSE, FFP, cryoprecipitate

TRANSPLANTATION

REJECTION

Chronic rejection is the **MOST COMMON** type of rejection

- ✓ Hyper-acute rejection is most common in transplant of KIDNEY
- ✓ Acute rejection occurs within 6 months
- ✓ Chronic rejection occurs in the form of Ischemic fibrosis

	Onset	Mediator	TTT	Result
HYPER-ACUTE	Immediate	Humoral ABO	Graft removal	Graft loss
ACUTE	<6 months	Cellular	High dose steroid (OKT3)	GOOD
CHRONIC	>6 months	Cellular/humoral	NONE	BAD

LIVER TRANSPLANTATION

- ✓ Indications :
 - a) Primary sclerosing Cholangitis
 - b) Biliary atresia
 - c) Fulminant hepatic failure
 - d) End stage liver disease secondary Hepatitis B,C
- ✓ Hyper-acute rejection is almost NOT PRESENT
- ✓ Acute rejection occurs in 30-50 % of patient, reversible is possible by steroids
- ✓ Chronic rejection is irreversible, needs re-transplantation
- ✓ ABO matching is a must, while HLA matching is not a must
- Immune-suppressive drugs:
 - ✓ Cyclosporine interferes with production of cytokines
 - ✓ OKT3 is more specific

BODY WATER

Total body water = 60% of Body weight (2/3)

ICF (2/3)
40% of adult
body weight

ECF (1/3)
20% of adult
body weight

Interstitial fluid (2/3)
10% of adult body weight

Intravascular fluid (1/3)
5% of adult body weight

Water balance is maintained by adjusting water intake & water loss..

INTAKE
(3000ml)

EXOGENOUS (2500 ml) ENDOGENOUS (500 ml)

LOSS

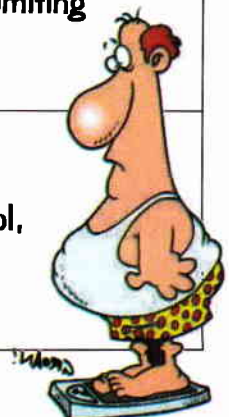
- Insensible water loss (1200ml)
 - 800ml → perspiration through skin
 - 400ml → Expiration through lungs
- Urine (1600ml), GIT (200ml)

BLOOD OSMOLARITY

- ✓ Osmolarity of BLOOD depends on PROTEIN concentration
- ✓ Osmolarity of ECF depends on Na, Cl, HCO₃
- ✓ Osmolarity of ICF depends on K, Organic phosphorus
- BODY OSMOLARITY = 300 mOsmol/Kg ..(Double Na level)
- ADH is controlled by Plasma osmolarity, ALDOSTERONE is Controlled by Na⁺, K⁺, Renin



	WATER DEPLETION	WATER OVERDOSE
ETIOLOGY	▪ <u>↓INTAKE:</u> - ↓ availability - Difficulty to swallow ▪ <u>↑OUTPUT:</u> - Fever, Osmotic diuresis	▪ <u>↑INTAKE:</u> - Pre-operative water enema - TURP \$ - Post-operative over infusion of Glucose 5% IV - Neurosis
CLINICAL PICTURE	عنتر في الصحراء Thirst, weakness, Oliguria Hypotension, Tachycardia Sunken eye, dry tongue	▪ <u>MODERATE:</u> ↑urine volume, ↑Body weight ▪ <u>MARKED:</u> Brain edema, Nausea, vomiting
TREATMENT	Replace by Na free water IV glucose 5%	▪ <u>MILD TOXICITY:</u> ↓ water intake ▪ <u>RENAL FAILURE:</u> Dialysis ▪ <u>BRAIN EDEMA:</u> Mannitol, Cortisol, Hypertonic saline (If there're CNS manifestations)



SODIUM

- ✓ Major extracellular cation
- ✓ Normal level " 135-145 mEq/L
- ✓ Most common site is BONE
- ✓ Main route for excretion is Kidney (reduced after trauma)
- ✓ Main regulator is Aldosterone



	HYPONATREMIA	HYPERNATREMIA
ETIOLOGY	<u>DILUTIONAL (MOST COMMON TYPE)</u> .. Water intoxication .. ✓ ↑Intake.. Post-operative infusion of Glucose 5%, TURP \$ ✓ ↓Output.. Renal failure <u>NON- DILUTIONAL</u> .. Shock .. ✓ ↓ dietary intake ✓ ↑Plasma, GIT, Rena loss	<u>RELATIVE HYPERNATREMIA:</u> ✓ Most common cause is WATER DEPLETION, Na with inadequate replacement <u>ABSOLUTE HYPERNATREMIA</u> ✓ <u>↑INPUT</u> .. Post-operative administration of Saline ✓ <u>SALT RETENTION</u> .. Cushing \$, Conn \$, Hyperaldesteronism
CLINICAL PICTURE	<u>MILD CASES (↓ECF):</u> Hypotension, Tachycardia, Oliguria, Empty Neck veins, Sunken eye, Dry tongue, Dry Skin <u>ADVANCED CASES (↑ICF):</u> CNS manifestations	Hypertension, Tachycardia, Enlarged Neck veins, Edema, CNS manifestations ending by seizures, Coma
TTT	✓ IF RELATIVE: as water intoxication ✓ ABSOLUTE HYPONATREMIA: - Mild to moderate → 0.9% NaCl - Severe → 5% NaCl ..(↑Na 1mEq/hour) N.B. If more: demyelination of Nerves ✓ TTT. Of Cause	✓ Active treatment: Sodium-free water (Correlated with duration of hypernatremia) ✓ TTT. Of Cause

POTASSIUM



- ✓ Main Intracellular cation (98%)
- ✓ N. level 3.5-5.3 mEq/L , Daily need : 60mEq/L
- ✓ Non-diffusible through cell membrane
- ✓ Insulin, B2 stimulants, alkalosis → K transfer into cells
- ✓ 90% of filtered K⁺ is reabsorbed through PCT
- ✓ ↑K levels in **Succus entericus**

(Succus entericus = intestinal juice → same conc. As PLASMA → if Leaking occurs: metabolic acidosis with N. anion gap)

	HYPOKALEMIA	HYPERKALEMIA
ETIOLOGY	RENAL LOSS ✓ ALKALOSIS ✓ Diuretics ✓ Antibiotics "Carbenicillin" ✓ Crohn's disease, Cushing \$ GIT LOSS ✓ SECRETORY DIARRHEA (ULCERATIVE COLITIS) ✓ Crohn's disease with fistula ✓ K losing tumor "Villous adenoma " ✓ Intracellular shift: Alkalosis, insulin	✓ Most common cause is EXCESSIVE IV K⁺ ✓ 2nd most common cause is Renal failure ✓ EXTRACELLULAR SHIFT: Tissue damage (Hemolysis, Rhabdomyolysis, Acidosis, insulin deficiency)
CLINICAL PICTURE	○ Asthenia ○ Atonia (ex: paralytic ileus) ○ ARRYTHMIA ○ Apathy	○ Asthenia, Atonia, Arrhythmia, Apathy ○ Constipation
INVEST.	✓ ECG : ▪ Flat or inverted T wave ▪ Prominent U wave ▪ Depressed S-T segment ✓ Investigations for the cause	✓ ECG : ▪ Prolonged PR ▪ Wide QRS ▪ ↑ S-T segment ✓ Investigations for the cause
TTT	RED + TTT. Of cause ✓ RULE OF 40 - Urine output must be >40 ml/hour - <40 mmol K⁺ added to 1 L fluid - Infusion rate should be at rate <40 mmol/hour ✓ ESTIMATE K⁺ DEFICIT (4.5 – serum K⁺ concentration) x 100 in Normal PH of an adult ✓ DECIDE ORAL OR IV K⁺	✓ Treatment of cause ✓ >7 meq/L → Dialysis ✓ <7 mEq/L → "BIG C" a) Sodium <u>B</u>icarbonates IV b) <u>I</u>nsulin regular infusion c) <u>G</u>lucose 25% d) <u>C</u>alcium .. antagonize Potassium effect on heart

CALCIUM



- ✓ N level : 8.5 -10.5 ml/dl
- ✓ Most common site is **BONES**
- ✓ Serum calcium exists in 2 forms:
 - 50% ionized→ **ACTIVE FORM**
 - 50% Non-ionized ... (40% of which is bound to albumin)
- ✓ Albumin's half-life in circulation is 15 days
- ✓ Determination of Protein level is essential in analysis of Calcium levels

	HYPOCALCEMIA	HYPERCALCEMIA
ETIOLOGY	▪ Most common cause is INJURY OF PARATHYROID GLAND after thyroidectomy ▪ Alkalosis ▪ Hypoalbuminemia ▪ Acute pancreatitis	▪ Most common cause is BONE SECONDARIES ▪ Hyper-parathyroidism ▪ Thyrotoxicosis
CLINICAL PICTURE:	MANIFEST HYPOCALCEMIA: ▪ Fingers, Circum-oral numbness & tingling ▪ Carpopedal spasm, Stridor, Convulsions LATENT HYPOCALCEMIA: ▪ CHOVESTTECH SIGN: tapping over branches of Facial→twitches in facial Ms ▪ TRAUSSAU SIGN	BONE, MOOD, STONE, GIT :: see clinical picture of hyperparathyroidism ::
Investi-gations	▪ Measure serum Calcium	▪ Measure serum Calcium ▪ Investigations for cause: - <u>Hyperparathyroidism</u> :: see investigations of hyperparathyroidism :: - <u>Bone secondaries</u>→ Bone scan
TTT	✓ Ca GLUCONATE 10% : 10 ml IV slowly ✓ TTT. Of cause MALIGNANT HYPERCALCEMIA ✓ Patient with Hyperparathyroidism ,exposed to stress ✓ CLINICAL PICTURE: - Poly-urea, Severe dehydration ✓ TREATMENT: a) Ringer Lactate b) Calcitonin c) METHRAMYCIN	MEDICAL TREATMENT ✓ IV fluids , Bisphosphonates TREATMENT OF CAUSE: ✓ Hyperparathyroidism :: see treatment of hyperparathyroidism :: ✓ Bone secondaries: - If operable→ Radical resection - If inoperable→Palliative resection, chemotherapy, Radiotherapy

ACID BASE BALANCE

- Products of metabolism are predominately ACIDS (CO_2 , organic acids)
- Maintenance of stable PH is achieved by BUFFER SYSTEM
- Most important buffer is HCO_3^- ... (easily manipulated by lungs & kidney)
- HCO_3^- is controlled SLOWLY by KIDNEYS ... Change is METABOLIC
- PCO_2 is controlled RAPIDLY by LUNGS ... Change is RESPIRATORY
- Blood PH, Electrolytes are assessed by ABG
- NORMAL VALUES:

- ✓ PH : 7.35 - 7.4
- ✓ HCO_3^- : 22-26 mmol/L
- ✓ PO_2 75-100mmol/L, PCO_2 35-42 mmol/L
- ✓ $\text{PH} = \text{Pka} + \log \frac{\text{HCO}_3^-}{\text{H}_2\text{CO}_3}$
- ✓ Bicarbonate, Carbonic acid ratio is 20:1

- In any metabolic or respiratory disorder...

COMPENSATION will restore Normal arterial PH PARTIALLY

- Respiratory compensation for metabolic disorders (Rapid, within minutes, Weak):
 - Metabolic acidosis → Hyperventilation ($\downarrow \text{PCO}_2$)
 - Metabolic alkalosis → Hypoventilation ($\uparrow \text{PCO}_2$)
- Metabolic compensation for respiratory disorders (Slow, 24-72 hours, Effective):
 - Respiratory acidosis → HCO_3^- production by kidney
 - Respiratory Alkalosis → HCO_3^- excretion

	METABOLIC ACIDOSIS	METABOLIC ALKALOSIS	RESPIRATORY ACIDOSIS	RESPIRATORY ALKALOSIS
Etiology:	$\downarrow \text{PH}$, $\downarrow \text{HCO}_3^-$ <u>$\uparrow$ Production of H^+:</u> -DKA, Myocardial infarction -Lactic acidosis -Septicemia, septic shock <u>HCO_3^- Loss:</u> -Renal failure -Diarrhea, intestinal fistula -Uretro-sigmoidostomy	$\uparrow \text{PH}$, $\uparrow \text{HCO}_3^-$ <u>Loss of H^+:</u> -VOMITING, diarrhea -Paradoxical aciduria (CHPS, Pyloric stenosis) -Diuretic therapy (Thiazide, loop diuretics) <u>$\uparrow \text{HCO}_3^-$:</u> -$\uparrow \uparrow$ intake of antacids (NaHCO_3)	$\downarrow \text{PH}$, $\uparrow \text{PCO}_2$ <u>HYPOVENTILATION</u> CNS depression, Ms. Weakness (Myasthenia gravis), COPD	$\uparrow \text{PH}$, $\downarrow \text{PCO}_2$ <u>HYPERVENTILATION</u> Hysterical, Hyperpyrexia
Clinical picture:	$\uparrow$ Rate, depth of Breathing "KUSMEL'S BREATH"	- C.P. of cause - If severe → Tetany	- Cyanosis - Irritability	$\uparrow$ Respiratory rate (Tetany, Respiratory arrest)
TTT.	-TTT. Of cause -If severe → NaHCO_3 (Body weight x 0.3 x Base deficient)	-TTT. Of cause -IV saline -If severe → Ammonium chloride slowly	Mechanical ventilation	Patient respire into a Paper bag

HOW TO DIAGNOSE ACID BASE BALANCE

PH: 7.35 - 7.4, HCO_3^- : 22-26 mmol/L, PO_2 75-100mmol/L, PCO_2 35-42 mmol/L

نشوف ال PH, HCO_3^-

- $\downarrow \text{PH} < 7.35$ = Acidosis
- $\uparrow \text{PH} > 7.4$ = Alkalosis

زى بعض

عكس بعض

METABOLIC DISORDER

RESPIRATORY DISORDER

$\downarrow \text{PH}, \downarrow \text{HCO}_3^-$

$\uparrow \text{PH}, \uparrow \text{HCO}_3^-$

METABOLIC ACIDOSIS

METABOLIC ALKALOSIS

Compensation:

- $\downarrow \text{PCO}_2$
(Hyperventilation)
- $\downarrow \text{H}^+$ (Renal loss)

Compensation:

- $\uparrow \text{PCO}_2$
(Hypoventilation)
- $\downarrow \text{HCO}_3^-$ (Renal)

$\downarrow \text{PH}, \uparrow \text{PCO}_2$

$\uparrow \text{PH}, \downarrow \text{PCO}_2$

RESPIRATORY ACIDOSIS

RESPIRATORY ALKALOSIS

Compensation:

- $\uparrow \text{HCO}_3^-$ (Buffer system)
- $\downarrow \text{H}^+$ (renal loss)

Compensation:

- $\downarrow \text{HCO}_3^-$ (Buffer)
- $\uparrow \text{H}^+$ (Renal)

- ☑ ACUTE respiratory changes $\rightarrow$ NO CHANGES in HCO_3^-
- ☑ CHRONIC Respiratory changes $\rightarrow$ CHANGE in HCO_3^-
- ☑ Every 10 mmol/L change in $\text{PCO}_2 \rightarrow$ 0.05 change in PH

MIXED DISORDER $\leftarrow$ لو ال CO_2 , HCO_3^- عكس بعض

RESPIRATORY,
METABOLIC ACIDOSIS

$\downarrow \text{HCO}_3^-, \uparrow \text{PCO}_2$

RESPIRATORY,
METABOLIC ALKALOSIS

$\uparrow \text{HCO}_3^-, \downarrow \text{PCO}_2$

ANION GAP

- Represents Anions NOT usually measured
- Value: 10-19 mmol/Litre
- Calculations: CATIONS (Na, K) - ANIONS (Cl, HCO_3^-)
- **METABOLIC ACIDOSIS:**
 - Due to $\downarrow \text{HCO}_3^-$.. NORMAL ANION GAP (HCO_3^- فقدت (RF, diarrhea, Intestinal fistulae)
 - Due to $\uparrow \text{H}^+$.. $\uparrow$ ANION GAP (Acid زودت (DKA, Lactic acidosis, Septic shock)

GIT JUICES

- ☑ Pancreatic juice is the MOST ALKALIE Juice
- ☑ Other alkaline juices :
 - Succus entericus
 - Bile juice
- ☑ Gastric juice is Acidic
 - $\uparrow \text{Na}, \uparrow \text{Cl}, \uparrow \text{H}^+, \text{No } \text{HCO}_3^-$

NUTRITION

ENTERAL NUTRITION

INDICATIONS OF ENTERAL NUTRITION:

- ☑ In Patients where ORAL intake is inadequate :
(Comatosed patient, Severe dysphagia, Neck surgery, Burns)

PATIENT REQUIREMENTS:

- ☑ SIP FEEDING: Whole food by mouth (fluid formula)
- ☑ TUBE FEEDING TECHNIQUES:
 - NGT: Ryle's tube
 - GASTROSTOMY → Liquid diet, Juice, Milk
 - JEJUNOSTOMY → Partially digested or elemental formulae

COMPLICATIONS OF ENTERAL NUTRITION:

- MECHANICAL: Malposition, displacement, Blockage, Breakage, Leakage
- INFECTIVE: exogenous or endogenous
- GIT: Diarrhea, bloating, Nausea, vomiting, abdominal cramps, constipation
- METABOLIC/ CHEMICAL: Electrolyte imbalance, malnutrition

TOTAL PARENTERAL NUTRITION

INDICATIONS OF TPN:

- ☑ Blocked GIT... Stricture, Neoplasm, Extrinsic mass
- ☑ Short GIT... Short Gut syndrome
- ☑ Fistulated GIT... Enterocutaneous fistula
- ☑ Inflamed GIT... Inflammatory Bowel disease
- ☑ Unsuitable condition... GIT can't cope as in severe trauma, hyper-catabolic state

PATIENT REQUIREMENTS:

- ☑ Surgical patient needs 40 Kcal/Kg body weight, 2400 Kcal/day
- ☑ Energy given:
(1gm CHO=4Kcal, 1gm Protein=4Kcal, 1gm Fat=9Kcal)
- ☑ Ratio in a well-balanced diet is .. (CHO 50%, Protein 15%, Fat 35%)
- ☑ Requirements are given in 2-4 liters of Fluids as following:
 - CHO → Glucose 50% + Insulin
 - Protein → Vamine or Totamine
 - Fat → Intra-lipid 10%

COMPLICATIONS OF TPN:

- Nutritional & metabolic complications:
(Hyperglycemia, Hypokalemia, Hyponatremia, Hyperosmolar coma)
- Central venous Catheter complications: (Hemothorax, Pneumothorax, Nerve injury, Central venous catheter infection & Septic thrombophlebitis)



POSTOPERATIVE COMPLICATIONS

☒ GENERAL COPLICATIONS:

- Fever (Most common 40%), Bed sores, Confusional state

☒ LOCAL WOUND COMPLICATIONS

☒ OTHER SYSTEMS COMPLICATIONS

- Respiratory ... See Cardiothoracic surgery ...
- Cardiovascular complications:
Hypotension, Hypertension , DVT
- Gastro-intestinal complications:
Post-operative Nausea, vomiting, Intestinal obstruction, jaundice
- Urinary complications:
Renal failure, Acute retention, UTI

POST-OPERATIVE FEVER

DAYS (Reactionary- Lung – Urine- wound)

- ☑ 0-1 → Reactionary : Ebb phase of inflammation
- ☑ 2-5 → Atelectasis of Lung
- ☑ 3-5 → Thrombophlebitis at the site of cannula
- ☑ 5-7 → DVT , UTI
- ☑ > 7days → Wound infection or sub-diaphragmatic abscess

**MOST COMMON
POST-OPERATIVE
COMPLICATION (40%)**

POSTOPERATIVE FLUID AND ELECTROLYTE THERAPY

FOR UNCOMPLICATED PATIENTS → 3 LITERS OF FLUIDS

- ☑ 500 ml saline (0.9% NaCl)
- ☑ 2.5 Liters 5% Dextrose (Glucose)
- ☑ K⁺ is given after 48 hours:
 - Saline is replaced by KADALEX (Contains 27 mmol K⁺/L)
 - Potassium Chloride supplements

N.B. Correction fluids imbalance should be **GRADUAL** to avoid fluid overload

MORPHINE

CONTRA-indications:

- ☑ Biliary operations
- ☑ Coma
- ☑ CNS problems
- ☑ Respiratory depression

Withdrawal effects:

Agitation, Vomiting, Diarrhea
عادل إمام فى فيلم النمر و الأنثى

أنا عايز
كاكولا



TRAUMATOLOGY & SHOCK



1. Focused abdominal sonogram for trauma (FAST) assesses for blood in pericardial sac, hepatorenal pouch, pelvis & spleno-renal pouch, but NOT in retroperitoneal space.
2. Small intestine is the most commonly affected organ in penetrating injury of abdomen.
3. The most important step in treatment of septic shock is drainage of septic collections.
4. Allowing blood which is ready for transfusion to remain for 4 hours in warm environment encourages bacterial proliferation & septicemia.
5. Donated blood is not routinely screened for CMV.
6. The most common problem resulting in hemostasis is thrombocytopenia.
7. Warfarin has half-life of about 36 hours.
8. Warfarin crosses the placenta & should be avoided in pregnancy.
9. Half-life of factor VIII is 8 hours.

WATER & ELECTROLYTES

1. Newborn infants have the greatest proportion of total body water (total body water decreases steadily with age).
2. Females & obese persons have a decreased percentage of TBW.
3. In a healthy adult, extracellular osmolarity is the same as intracellular osmolarity.
4. Normal saline contains 154 mmol Sodium & 154 mmol Chloride.
5. HARTMANN'S SOLUTION contains calcium bicarbonate.
6. The major anion in the intracellular fluid is PHOSPHATE .
7. Sodium urinary excretion is reduced after trauma.
8. Intracellular concentration of K^+ is 150 mEq/L.
9. The average daily need of K^+ is about 60 mEq/L.
10. The most serious consequence of K^+ imbalance is cardiac abnormalities.
11. Magnesium is the 2nd most abundant intracellular cation.
12. The cardiovascular effects of hypomagnesaemia are similar to those of hypokalemia.
13. The most significant inorganic plasma buffer is bicarbonate.
14. The 3 most important buffers in body fluids include: bicarbonate, phosphate & protein.
15. The ideal infusion fluid for correction of hypokalemic alkalosis due to pyloric obstruction is normal saline.

TUMORS

1. Locally invasive tumors include basal cell carcinoma, mixed salivary tumor, bronchial adenoma, adamantinoma & osteoclastoma.
2. Genetic predisposition to cancer is related to increased chromosomal fragility & defect in DNA repair enzymes.
3. Thyroid, breast & lung cancers are commonly metastasizing by blood.



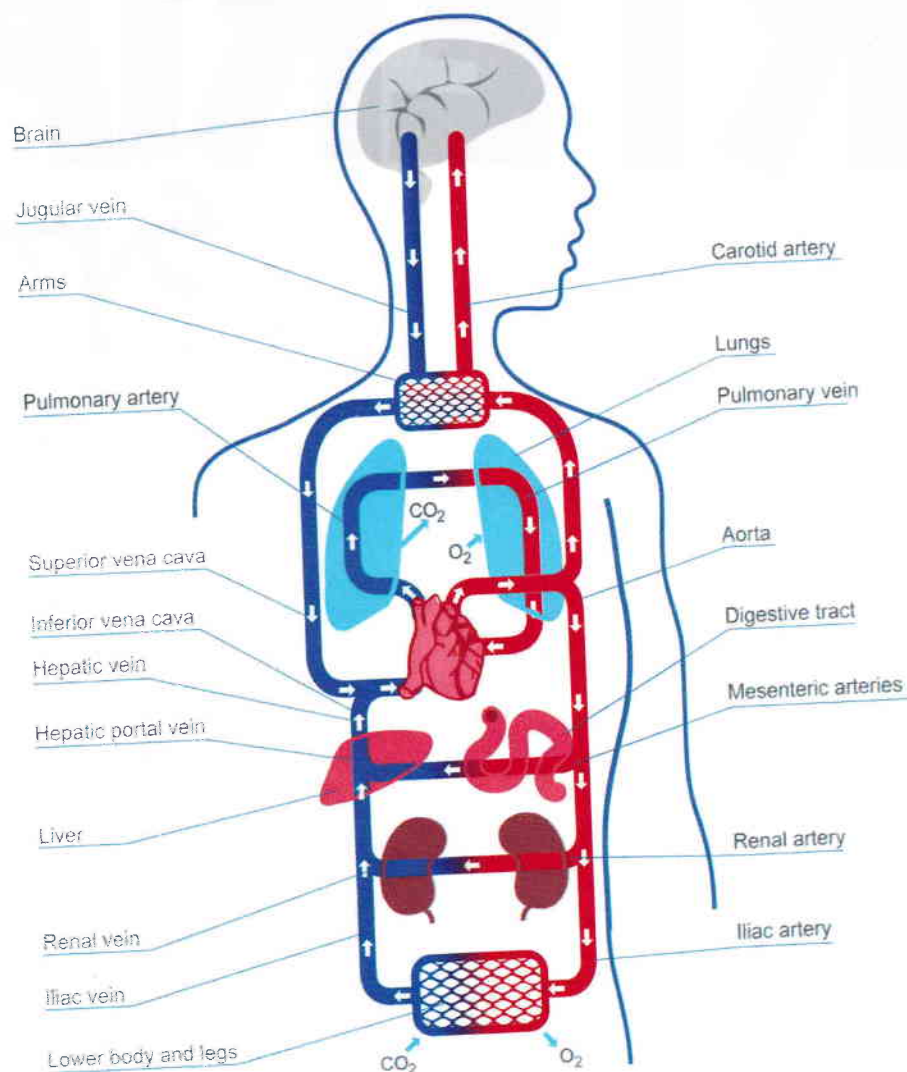
- Clinical picture of septic shock
(Kasr: 2008)
- Management of septic shock
(Azhar M: 2011)
- Patient with septic shock have a worse prognosis than those with hypovolemic shock
(Kasr: 2008)
- Discuss Etiopathology and C/P of hypovolemic shock
(Kasr: 2011 - Ain shams: 2001, 2002 - Azhar M: 2011, 2008)
- Types of Hemorrhage and their management
(Kasr: 2007)
- Factors affecting wound healing
(Azhar M: 2009 - Azhar F: 2006, 2005 - Kasr: 2007)
- Complications of wound healing
(Kasr: 2011)
- Complications of Blood Transfusion
(Kasr: 2007, 2008 - Ain shams: 2000, 2010 - Azhar F: 2007, 2004, 2001, 2003, 2009 - Azhar M: 2007, 2006, 2004, 2003, 2001)
- Complications of spinal anesthesia
(Kasr: 2007 - Azhar M: 2002, 2001, 2000 - Azhar F: 2007, 2006, 2004)
- Complications of general anesthesia
(Azhar F: 2005 - Azhar M: 2001)
- Enumerate post-operative complications
(Azhar F: 2007)
- Post-operative pulmonary complications
(Azhar F: 2004 - Azhar M: 2005)
- Post-operative fever
(Kasr: 2008)

TAKE YOUR
Notes!!



SURGI- TOONS

VASCULAR SURGERY



ARTERIAL

System

ACUTE ISCHEMIA

DEFINITION: Lack of blood flow due to sudden occlusion of previously patent artery with NO time for collaterals to open.

OF ACUTE ISCHEMIA

6 Ps

⊖ PAIN

Severe, in the most peripheral part of limb

⊖ Pallor

- 1) Marble white
- 2) Mottled app. After 6-12 hours
- 3) Fixed blue staining of skin

IRREVERSIBLE

⊖ Pulselessness distal to site of embolisation

⊖ Paralysis

Early in arterial, late in venous obstruction

⊖ Paresthesia (Anesthesia)

LATE, but reversible after TTT for few months

⊖ Progressive Coldness

CLASSIFICATION OF ACUTE ISCHEMIA

VIALE THREATENED IRREVERSIBLE



- ⊗ Fixed color changes
- ⊗ **ABNORMAL MUSCLE TURGIDITY**

EMBOLISM

- ⊗ Young age
- ⊗ Incidence: FIA, Femoral (40%)
- ⊗ **PDF:**
 - Mitral stenosis with AF
 - Left atrial Myxoma
 - Mural thrombosis
 - From Large arteries → Atherosclerosis, aneurysms
 - Veins → Venous thrombi, VSD, ASD, Eisenmenger \$
- ⊗ **LIMB :**
 - ✓ Sudden onset
 - ✓ Pale, white,
 - ✓ **NO TROPHIC CHANGES**
 - ✓ **ANGIO → NO COLLATERALS**
- ⊗ **Other presentations acc.**
To affected artery :
 - Brain → TIA, Stroke
 - Retina → Amaurosis Fugax
 - Mesenteric vessels → Gangrene
 - Spleen → Local pain
 - Kidneys → Hematuria

THROMBOSIS

- ⊗ OLD age
- ⊗ **PDF :**
 - Atherosclerosis
 - Stasis, Hyper-viscosity (Diarrhea, polycythemia)
- ⊗ **LIMB :**
 - ✓ Acute but less dramatic
 - ✓ Pale, white
 - ✓ **TROPHIC CHANGES**
 - ✓ **ANGIO → +VE COLLATERALS**
 - ✓ Past History of Intermittent claudications

ARTERIAL INJURY

ETIOLOGY

- ⊗ Open
- ⊗ Closed
- ⊗ Iatrogenic
- ⊗ Intra-arterial drug Injection

C/O:

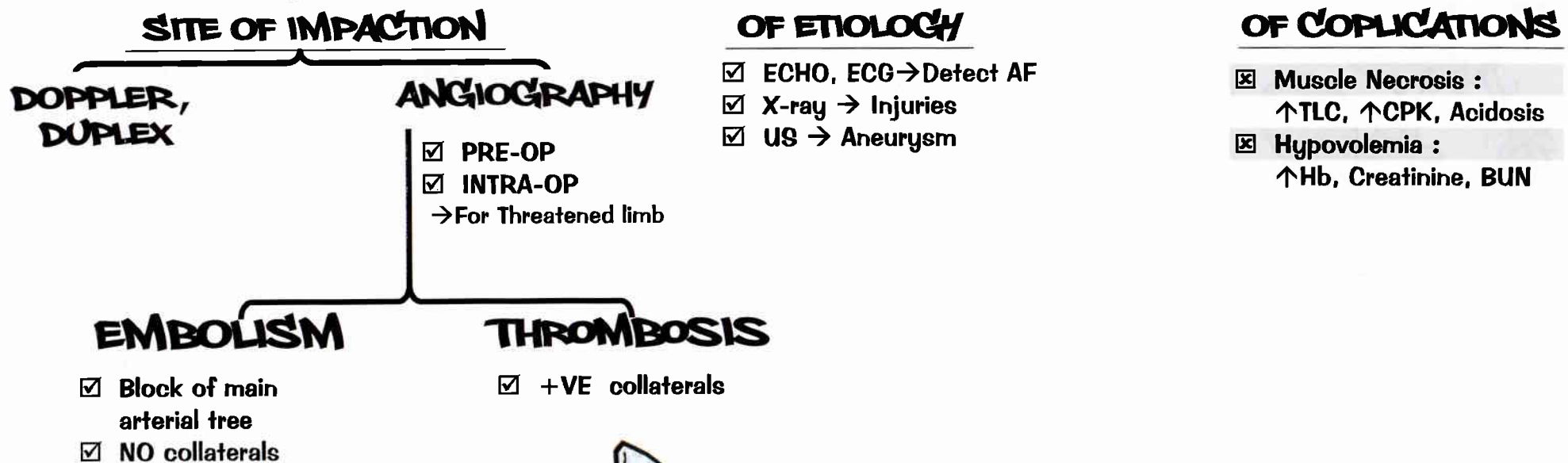
- ⊗ History of trauma
- ⊗ Bleeding

O/E:

- ⊗ Shock
- ⊗ Hard signs vs. Soft signs



INVESTIGATIONS OF ACUTE ISCHEMIA



PERIPHERAL ARTERIAL INJURY

HARD SIGNS VS SOFT SIGNS

HARD SIGNS	SOFT SIGNS
☒ 6 Ps ☒ Pulsatile Hemorrhage ☒ Pulsatile Hematoma ☒ Palpable thrill, bruit ☒ No distal pulse	☒ Hematoma non pulsating, non-expanding ☒ Nerve injury ☒ Wound is near a major vascular structure ☒ Delayed capillary refilling time
Urgent exploration with NO investigations	Urgent Investigations (Angio, Doppler, X-ray)

TTT OF ACUTE ISCHEMIA

PRE-OPERATIVE

- ✓ Hospitalization
- ✓ Oxygen, digitalis
- ✓ Antibiotics
- ✓ Morphine
- ✓ Heparin : 5000 units IV

INTRA-OPERATIVE

POST-OPERATIVE

OF CAUSE

EMBOLISM

- ☒ Anti-coagulants
- ☒ Anti-arrythmics

THROMBOSIS

Elective BYPASS

OF COMP

- ☒ Gangrene
Amputation
- ☒ Volkman's contracture
Tendon transfer
- ☒ Crush \$
IV fluids,
Alkalanization
of urine

EMBOLISM

- ☒ If within 6 hours:

URGENT EMBOLECTOMY (Fogerty catheter)

- 1) Femoral artery → Common femoral transverse arteriotomy
- 2) Aortic bifurcation → Bilateral Femoral arteriotomies

- ☒ If Late :

Fasciotomy

(To prevent compartmental \$)

- ☒ Signs of adequate embolectomy:

- Pulse felt
- Color, temperature
- Reverse bleeding
- Intra-Op angiography

THROMBOSIS

ARTERIAL INJURY

VIALE

THROMBOLYTICS

Follow up clinically and angiography

IMPROVE

ELECTIVE

re-vascularization

NO IMPROVEMENT

URGENT

Re-vascularization

THREATENED

Urgent ANGIO
+ URGENT
REVASCLARIZATION
SURGERY

IRREVERSIBLE

AMPUTATION

THROMBOLYTICS

- ☒ Streptokinase Pulse spray or IV
- ☒ Loading dose, followed by maintenance
- ☒ Recent → Recombinant Tissue plasminogen activator

TTT OF PERIPHERAL ARTERIAL INJURY

℞ PRIMARY SURVEY: ABCDE Airway, breathing, circulation, Drugs, exposure

℞ SECONDARY SURVEY : Head to toe Exam, AMPLE History , Investigations (Angio ,Doppler)

REDUCTION OF THE FRACTURE

WAIT for 20 minutes

Pulse returns

No pulse

DEAL WITH THE FRACTURE

EXPLORE & DEAL

OPEN

Irrigate with saline &
Wound debridment

- ☒ Skin → Excision of 1-2cm
- ☒ Fascia → Open tense fascia
- ☒ MS. → Excision of dead Ms.
- ☒ Nerve → Mark with black silk
- ☒ Blood vessel → Deal as Closed injury with tear...

CLOSED

WITHOUT TEAR

SPASM

Painting Or
Intra-arterial
papaverine

CONTUSION

Excision of the
contused
segment and
saphenous graft

WITH TEAR

PARTIAL

<1/2
circumference

Repair with
proline sutures

>1/2
circumference

Treat as
Complete

COMPLETE

- 1) Repair in oblique manner
- 2) Mobilize artery
- 3) Cut branches
- 4) Saphenous vein graft

CHRONIC PERIPHERAL ARTERIAL DISEASE

PT < 45 YEARS

ATHEROSCLEROSIS

PT < 45 YEARS

DIABETIC

**PRESENILE
ATHEROSCLEROSIS**

Non-DIABETIC

Male

**BURGER'S
ARTERITIS**

Female

**RAYNAUD'S
ARTERITIS**

CLINICAL STAGES (FONTAINE)

ASYMPTOMATIC

CLAUDICANT

CLI

GANGRENE

TYPE OF PATIENT

- ☒ Atherosclerosis → Male > 50 years with risk factors (DM, HTN, Obesity)
- ☒ Burger's → Male 20-40 Year, Heavy smoker

SYMPTOMS

- ☒ Cramp-like PAIN, ↑ by walking, ↓ by & rest
- ☒ Progression → shorter claudication distance, ↑ Period of rest
- ☒ Affection of other systems
 - CNS : TIA, stroke
 - CVS : HF
 - Kidney : Pain, hematuria, hypertension
 - Genital : Leriche syndrome

GENERAL EXAMINATION

- ☒ Vital signs :
 - Systolic Bruit → (Aneurysm)
 - Continuous Bruit → (arterio-venous fistula)

LOCAL EXAMINATION → LIMB IN LAYERS



CLAUDICANT LIMB

TYPE OF PATIENT

- ☒ Atherosclerosis → Male > 50 years with risk factors (DM, HTN, Obesity)
- ☒ Burger's → Male 20-40 Yr, Heavy smoker

1- REST PAIN

- ☒ Severe pain that awakens Pt. from sleep
- ☒ ↑ by REST, AT NIGHT, ELEVATING LEG
- ☒ ↓ by Hanging foot down
- ☒ NEVER above Ankle
- ☒ Dry gangrene (Wet if HF, Infection)

2- ABSENCE OF PERIPHERAL PULSATION

1- ULCER RESISTANT FOR HEALING :

- ☒ Tender ulcer Between Toes, dorsum of foot
- ☒ Edge → Punched out
- ☒ Margin → Black, mummified
- ☒ Floor → Granulation
- ☒ Base → Difficult to palpate

2- GANGRENE



CRITICAL LIMB ISCHEMIA

INVESTIGATIONS OF CHRONIC ISHCEMIA

رجل العيان

العيان نفسه

CLAUDICANT

DOPPLER

تشخيص

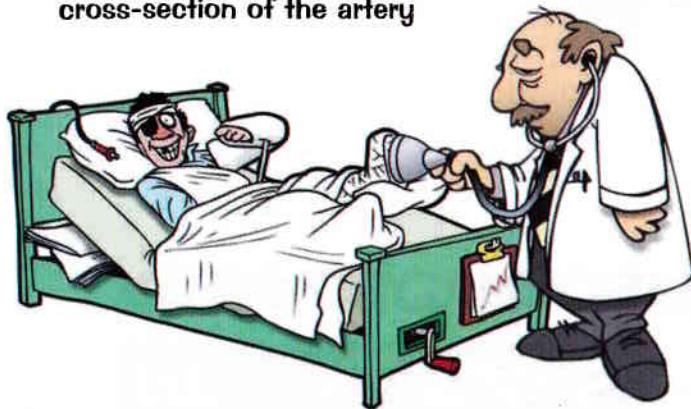
Biphasic flow
(Collaterals)

متابعة

ABPI
 ▪ Normal >1
 ▪ 0.5 : CLI
 In diabetics →
 Toe Brachial index

DUPLEX

Shows the Flow, Anatomy,
cross-section of the artery



CRITICAL LIMB ISCHEMIA

PRE-OPERATIVE ANGIOGRAPHY

IF RF → MRA

ADVANTAGES:

- Site of stenosis
- Extent of stenosis
- Collaterals
- Run in & off

TECHNIQUES:

- Direct femoral arteriography
- Trans-lumbar arteriography
(if both femoral pulses aren't pulsable)
- Trans-axillary arteriography
(if the whole distal aorta is occluded)

COMPLICATIONS:

- Neurological deficit
- Hemorrhage
- Pulsatile mass
- Infection at puncture site
- Allergic reaction to the contrast media
- Thrombosis

- ☒ CBC → Anemia , Polycythemia
(Anemia aggravated ischemia)
- ☒ FBS → DM
- ☒ KFT → Atherosclerotic kidney
- ☒ LFT → Impaired
- ☒ ECG → IHD
- ☒ CXR → Prominent aortic knuckle,
calcified atheroma
- ☒ Lipid profile



TREATMENT OF CHRONIC ISCHEMIA

CLAUDICANT

BEST MEDICAL TTT

☒ RISK FACTORS MODIFICATION

- Cessation of smoking
- Proper control of DM
- Control BP
- Lipid lowering

☒ ANTI-PLATELETS

- Aspirin 75 mg/day
(If patient is intolerant → Plavix)
- Clopidogrel

☒ VASO ACTIVE DRUGS

☒ CARE OF FOOT

☒ EXERCISE (To ↑ claudication distance)

IMPROVEMENT NON-IMPROVEMENT

ANGIOGRAPHY



SYNTHETIC
KNITTED
DACRON

CRITICAL LIMB ISCHEMIA

PRE-OPERATIVE ANGIOGRAPHY

+VE DISTAL RUN-OFF

SHORT SEGMENT

- ☑ Endarterectomy
- ☑ Balloon Angioplasty
With or without Stent

LONG SEGMENT

ARTERIAL BYPASS

ABOVE INGUINAL LIGAMENT

Synthetic graft

BILATERAL (LERICHE \$)

- ☑ Aorto-Bifemoral Bypass
- ☑ IF UNFIT (e.g. cardiac patient) → Axillo-Bifemoral Bypass

UNILATERAL

- IF FIT → Aorto-femoral bypass
- IF UNFI → Femoro-Femoral Bypass

BELOW INGUINAL LIGAMENT

Saphenous Graft

IN SITU

Femoro-
distal
bypass

REVERSED

Femoro-
Popliteal
bypass



نظرية البؤ
الكبير و البؤ
الصغير

- VE DISTAL RUN-OFF

EX: BURGER DIS

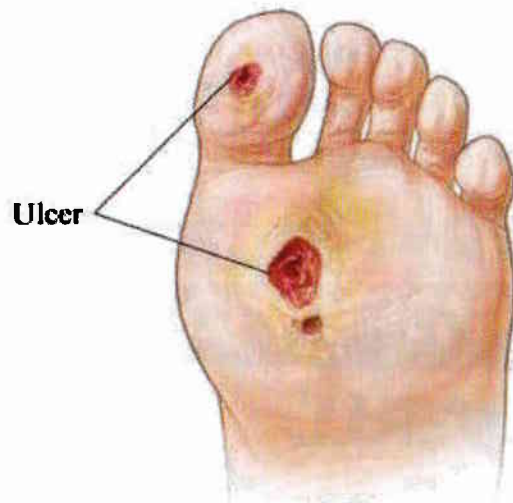
- ☑ IV PG
- ☑ SYMPATHECTOMY
- ☑ Amputation

DIABETIC FOOT

DEFINITION: a complex pathology in a diabetic patient's foot which is related to duration & Control of the disease

NEUROPATHIC ULCER

- ☒ Painless
- ☒ Deep
- ☒ At pressure sites
- ☒ Foot is :
 - ✓ Warm
 - ✓ Bounding pulse
 - ✓ Distended veins
- ☒ Duplex :
 - Normal or high Flow
- ☒ TTT : control DM, foot care, Vitamins



FOOT INFECTION

- ☒ Limb is: Swollen
Red, hot, tender
(Inflammatory reaction is weak as Pt. is Immuno-compromized)
- ☒ May spread → Osteomyelitis, Septic shock
- ☒ TREATMENT:
 - Debridement
 - Antibiotics
 - Daily dressing
 - If gangrenous → Amputation

VASCULOPATHY

MACRO-ANGIOPATHY

NO PULSE

DOPPLER & ANGIOGRAPHY

Run off
+ SHORT
segment

PTA

MICRO-ANGIOPATHY

- ☒ Pulse is felt
- ☒ No bleeding

- ☒ DEBRIDMENT
- ☒ Antibiotics
- ☒ Daily dressing till the wound is TIDY → FLAP

Run off
+ LONG
segment

BYPASS

MIXED

GANGRENOUS

WET

On top of
INFECTION

Amputation

DRY

On top of
Chronic
Ischemia

Limb
Salvage

Bypass is
done then
Amputation



VASO-SPASTIC DISORDERS RAYNAUD'S...

DEFINITION: Recurrent ischemic attacks precipitated by exposure to coldness or emotional stress

PRIMARY RAYNAUD'S DISEASE



✓ ETIOLOGY:

- ↑ sympathetic tone
- Psychological instability
- Abnormal sensitivity of hand to coldness

✓ CLINICAL PICTURE:

- Young female "شياكة" بنت من الدفعة مدخلة إيديها في البلوفر
- **UPPER LIMB**
- **BILATERAL, SYMMETRICAL**
- **NO** trophic changes
- Peripheral Pulsations are **FELT**

TREATMENT

Care of Patient

- Stop smoking
- Avoid cold weather
- TTT. of anemia if present

Care of Hand

- Dryness
- Woolen gloves
- Exercise

Drugs

- Vasodilators
- Baby aspirin
- CCB

Surgery

Sympathectomy
(Cervico-dorsal)

NB

- **ACROCYANOSIS:** Sympathectomy is **EFFECTIVE**
- **FROST BITE:** Emergency TTT → Immersion of affected part in Warm water (40-44c)

SECONDARY RAYNAUD'S PHENOMENON

✓ ETIOLOGY:

- Collagen: SLE, Scleroderma
- Arterial obstruction: Burger's disease
- Nerve injury: Thoracic outlet \$, Carpal tunnel \$
- Drugs: Beta Blockers

✓ CLINICAL PICTURE:

- MAY AFFECT **LOWER LIMB**
- **UNILATERAL, ASYMMETRICAL**
- **+ve** Trophic changes
- **NO** Peripheral Pulsations

TREATMENT

TTT of CAUSE

Vasodilators (Avoid Beta Blockers)

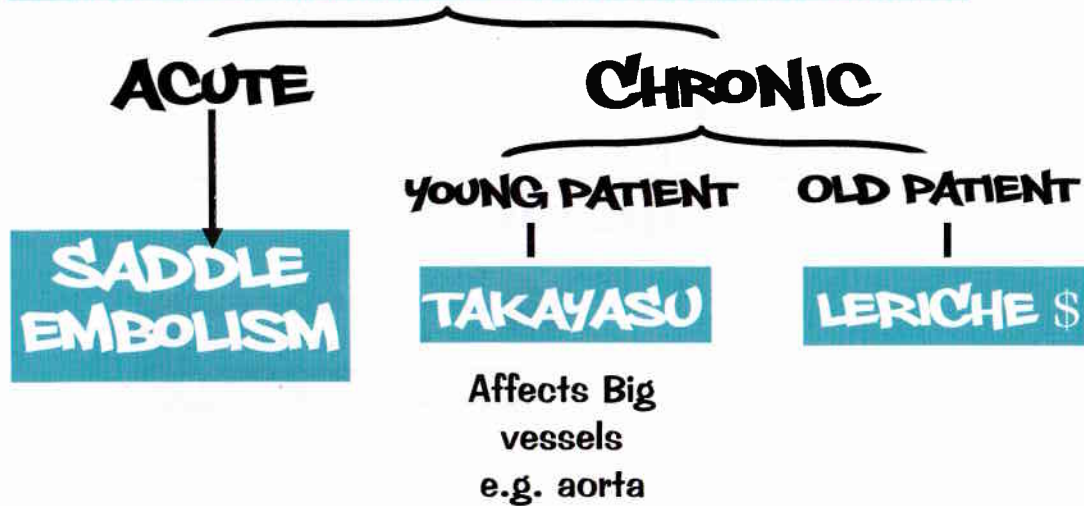
Sympathectomy

NO BENEFIT EXCEPT:

- If vasculitis occur
- Cryo-antibodies (Makes sympathectomy ineffective)

MISCELLANEOUS TOPICS

AORTO BI-ILIAC OBSTRUCTION



CAROTID ARTERY STENOSIS

Surgical intervention

- ♣ Indication: >70% stenosis if Symptomatic or >80% if Asymptomatic
- ♣ Method :
 - 1) Carotid Angioplasty & Stenting
 - 2) Endarterectomy

CAROTID BODY TUMOR

3 أسامي و Angio و ممنوع ال Biopsy

Other Names:

- ⊖ Chemodectoma
- ⊖ Potato Tumor

Angiography:

- ⊖ Widening of the Carotid Artery bifurcation

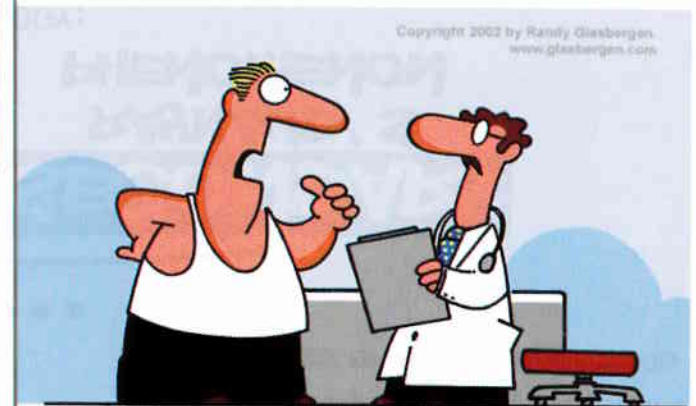
BIOPSY (highly vascular)

Treatment:

Excision or ligation, with preservation of ICA

RENAL A. STENOSIS

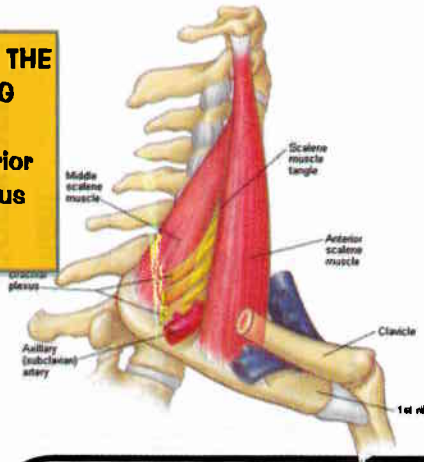
- ⊖ Hypertension NOT responding to medication
- ⊖ Treatment:
Balloon dilatation & Stent



"I've always been a high achiever, always striving for bigger, faster, greater...and now suddenly I'm expected to settle for lower blood pressure and less cholesterol?!"

BOUNDARIES OF THE COMPRESSING TRIANGLE:

- Scalenus anterior
- Scalenus medius
- First rib



THORACIC OUTLET SYNDROME

DEFINITION: Compression of N. (Brachial plexus) & artery (Subclavian A.) while crossing through the narrow triangle in the base of Neck

Etiology

- ☒ Cervical rib
- ☒ Scalene \$ الى بيلعب جيم
- ☒ Hyperabduction \$ النفاش
- ☒ Mal-union of Clavicle
- ☒ Pencost tumor

NEURAL

Compression of Lower trunk of brachial Plexus

SENSORY

On Ulnar side of Hand & Forearm

MOTOR

Small Muscles Of Hand → Atrophy & Weakness

ARTERIAL

Compression of Subclavian Artery

CHRONIC ISCHEMIA OF UL

Claudication pain with exercise

2ry Raynaud Phenomenon

POST STENOTIC DILATATION

Emboli to Index & middle finger (DIGITAL GANGRENE)

SIGNS:

- Unequal pulses on both sides
- **POSITIVE ADDISON'S TEST** → Radial pulse becomes weak

INVESTIGATIONS

- ☒ Angiography:
 - Compression of Subclavian artery on Elevation of arm
 - There's Post-stenotic dilatation
- ☒ Plain x-ray → Cervical rib
- ☒ Nerve conduction velocity is prolonged

VENOUS

Compression of Subclavian Vein (Rare as it's outside the triangle)

Effort thrombosis & DVT

TREATMENT

MILD (NEUROLOGICAL)

- ☒ Physio & Shoulder exercise

SEVERE (ARTERIAL)

- ☒ Resection of Cervical rib or 1st rib
- ☒ Scaleneotomy

ANEURYSMS

DEFINITION:

- 1- Sac filled with blood communicating with an artery
- 2- Permanent localized dilatation of an artery 1-5 times the normal

ETIOLOGY:

Congenital, Atherosclerosis, Syphilis, Traumatic

TYPE OF PATIENT:

- Old patient (Atherosclerotic)
- Young patient (Traumatic, congenital)

SYMPTOMS:

- May be asymptomatic ...
- Swelling, Pressure & Ischemic manifestations

SIGNS:

PULSATILNG SWELLING

- Cystic
- Along course of artery
- Moves **ACROSS** the artery
- Compressible or partially compressible (thrombosis)
- Auscultation → Bruit

COMPLICATIONS:

- **RUPTURE**
- Pressure manifestations → V,A,N.
- Ischemia
- Thrombosis , Embolism ,Atherosclerosis
- Infection → Rupture, secondary hemorrhage

INVESTIGATIONS

- Screening → **US**
- Diagnostic → **CT scan**
- Best pre-operative Investigations → **Spiral CT**

N.B. Angiography doesn't show the true diameter of aneurysm

TREATMENT

Conservative

Follow up every 3 months by U/S



Surgery if indicated

▪ INDICAIONS OF SURGERY

- If symptomatic
- Diameter > 5cm
- High risk patient

▪ SURGICAL PROCEDURES

- Excision & graft
- Exclusion graft
- Intra-luminal self-inflatable graft



ABDOMINAL AORTIC ANEURYSMS

MOST COMMON TYPE OF ANEURYSMS

INCIDENCE:

- 95% due to atherosclerosis
- 95% below origin of Renal arteries
- 75% ASYMPTOMATIC

CLINICAL PICTURE:

- Vague abdominal pain with backache

COMPLICATIONS:

♣ RUPTURE:

Shock, acute abdominal pain, Pulsating epigastric mass

♣ Distal embolization

- 1) Spontaneous → Blue toe \$
- 2) Iatrogenic → Trash Foot

INVESTIGATIONS:

- For aneurysm → U/S, CT, MRA, Angiography
- For other systems → ECG, CBC, Lipid profile

TREATMENT

Conservative

Follow up every 3 months by U/S

Surgery if indicated

▪ INDICATIONS OF SURGERY

- If symptomatic, Diameter > 5cm, High risk patient

▪ SURGICAL PROCEDURES

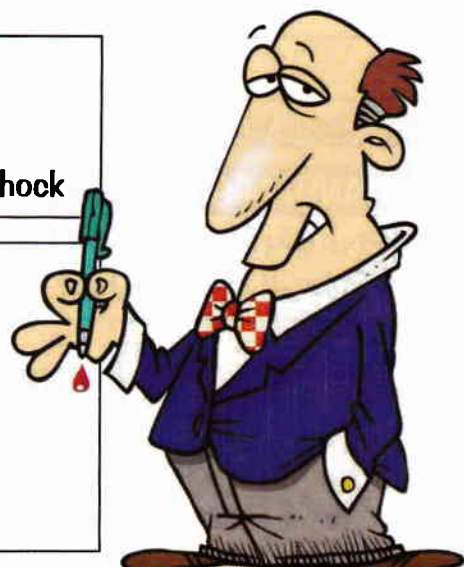
- Excision & graft
- Exclusion graft
- Intra-luminal self-inflatable graft

RUPTURED ANEURYSM

- INTRA-PERITONEAL: Fatal
- RETRO-PERITONEAL (LEAKING A.A.): Epigastric pain & Shock

POPLITEAL A. ANEURYSM

- **MOST COMMON PERIPHERAL ANEURYSM**
- **O/E:** Pulsating popliteal A. in a patient who's not thin
- **COMPLICATIONS:**
 - **DISTAL EMBOLI (Most common), RUPTURE IS RARE**



A-V FISTULA

CONGENITAL

خروم كثيرة في رجل العيان

- Hyperdynamic circulation in the growing limb **LOCAL GIGANTISM**
(Hyperdynamic circulation in a growing limb)
- Manifested by **Varicose Veins**.



ACQUIRED

- In thigh → Butcher's Thigh
- In Axilla → واحد بيحب حاجة من فوق الدولاب و فجأة هجم عليه حرامى و غزّه فى باطه !!

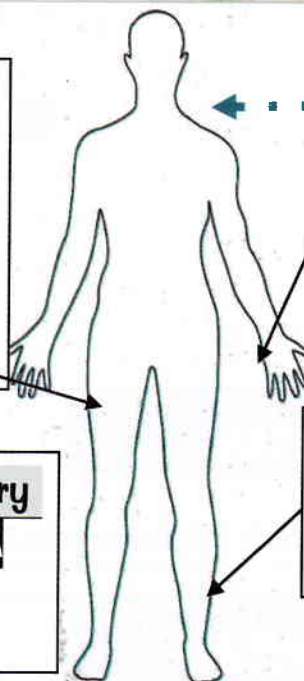


Swelling:

- Pulsatile
- Thrill & bruit
- Compressible Or Partially compressible (thrombosis)

On Compression on feeding artery

- **BRANHAM'S BRADYCARDIA**
أحط إيدى على المكان يقل ال pulse
أشيل إيدى يزيد ال Pulse



General

- **Tachycardia**
- **Water hammer pulse**

Distally:

- **Varicose veins**
- **Ischemia**

INVESTIGATIONS:

ARTERIOGRAPHY

TREATMENT:

Reconstruction of A,V

GANGRENE

Macroscopic death of tissues due to loss of blood supply and is usually associated with bacterial invasion

- ETIOLOGY:**
1. Ischemic → thrombosis, embolism, vasospastic disease.
 2. Neuropathic → syringomyelia, leprosy.
 3. Venous Gangrene (see below).
 4. Traumatic → direct (bed sores), or indirect (arterial injuries)
 5. Infective → Specific infection or Non-specific infection
 6. Physiochemical → burns, caustics, frostbite,...

TYPES OF GANGRENE:

	DRY GANGRENE	MOIST ASEPTIC GANGRENE	MOIST SEPTIC GANGRENE
Causes	Chronic ischemia	- Acute ischemia - Chronic ischemia with pre-existing edema (cardiac, DVT).	- PRIMARY: Infection of tissues with virulent organisms leading to gangrene - SECONDARY: Infection of sterile gangrene
Pathology			
Putrefaction	Minimal	Marked	
Odor	little or no odor	Very offensive	
Gross picture	- Dry, Wrinkled, Mummified. - Hard, Dark	- The part remains of the same size and consistency. - Color: dead white → purple or greenish black.	-
Line of demarcation	well defined	ill defined (no time for evaporation)	
Fate	Separation → Leaving a conical stump	Spread → SKIPPED LESIONS	
C/P	1. The five cardinal signs of local death : Lost (pulsation, Sensation, Heat, Function of affected part, fixed color changes) Press & see How Color fades		- The affected limb becomes swollen, edematous and markedly inflamed. - The skin → moist with bullae - offensive odour & may crepitate
	2. Minimal toxemia → better general condition.	3. Severe toxemia → poor general condition.	
Treatment	- Limb salvage (conservative amputation). - Non-conservative amputation.	- Amputation till the level of pulsation - Tt of the cause if possible.	-

SPECIAL TYPES OF GANGRENE

DECUBITUS ULCER (BED SORES):

- Site→ over bony prominence (sacrum, ischial tuberosity or heels)

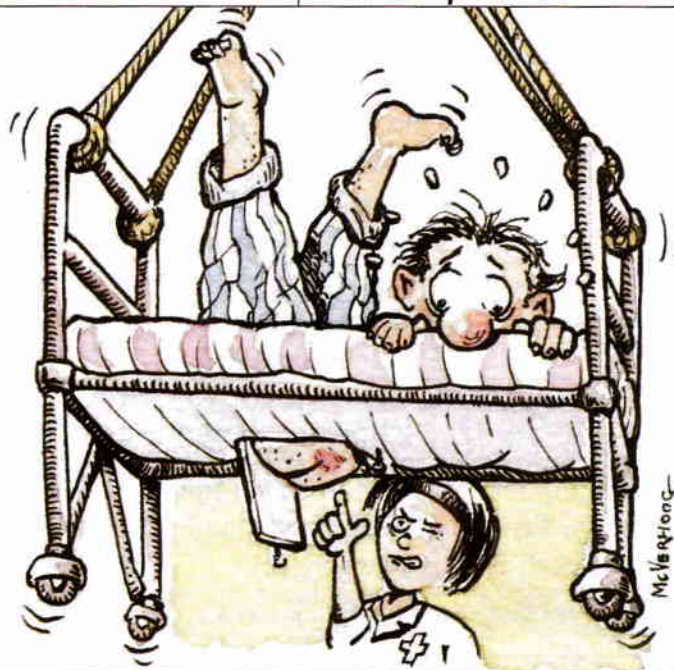
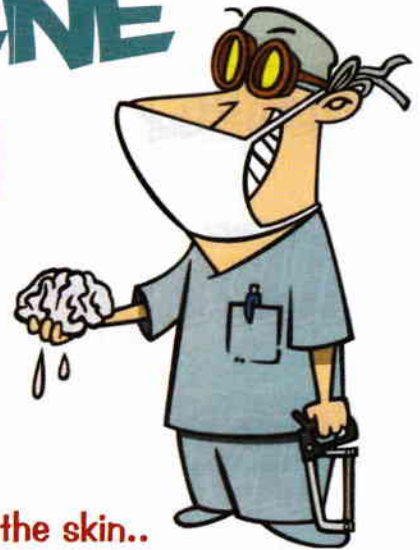
Etiology

- Prolonged pressure.
- After immobilization of paraplegic patients, elderly & diabetics.

..Bony prominence cuts the blood supply of the skin..

Treatment

PROPHYLACTIC TREATMENT	ACTIVE TREATMENT
- Air mattress - Skin should be kept dry & clean. - Frequent change of position every 2 hours.	- Debridement - Leave the wound open until healing - Repeated dressing with glycerin magnesia - Antibiotics - Skin Flap



FOURNIER'S GANGRENE

- Sudden onset of scrotal inflammation
- sudden onset of gangrene
- May be associated with necrotizing fasciitis

Treatment.

- 1) Antibiotics & wide surgical excision.
- 2) Later→ skin graft to cover the testis.

Venous gangrene (rare)

- Caused by extensive thrombosis of the major peripheral veins (phlegmasia cerulea dolens)
- Treatment:
 - 1) Elevate limb
 - 2) Anticoagulant therapy is started.
 - 3) Thrombectomy or fibrinolytic treatment should be considered.

VENOUS System

VENOUS THROMBOSIS

N.B. VIRCHOW TRIAD: VELOCITY, VISCOSITY, VESSEL WALL

THROMBOPHLEBITIS MIGRANS

DEFINITION:

A type of superficial thrombophlebitis that resolves spontaneously in few weeks then appear in another area

OCCURS WITH:

- Visceral cancer **"TROUSSEAU'S SIGN"** "The Earliest sign"
- Burger's disease
- Polycythemia, PAN
- Ulcerative colitis, SLE

بتسافر بين
Veins ال



DEEP VENOUS THROMBOSIS

CLINICAL PICTURE:

- **ASYMPTOMATIC:** Most cases are silent but are suspected by unexplained Post-operative fever, tachycardia
- **SYMPTOMATIC:** **3rd -7th DAY POSTOPERATIVE**
 - GENERAL C/P: Fever, Tachycardia out of proportion
 - LOCAL C/P: **SWELLING + PAIN + TENDERNESS "HOMAN'S SIGN"**

COMPLICATIONS:

- ♣ **GENERAL:** Pulmonary Embolism
- ♣ **LOCAL:**
 - EARLY: Phlegmasia ALBA dolens, Phlegmasia CERULA dolens
 - LATE: Post-phlebitic limb leading to 2ry Varicose veins, Venous gangrene

INVESTIGATIONS:

- **FOR DIAGNOSIS:**
 - Colored Duplex
 - Recently: SPIRAL CT, Radioactive Fibrinogen
- **FOR PULMONARY EMBOLISM:**
 - SPIRAL CT, V/Q LUNG SCAN, Angiography, Chest X-ray
- **INVESTIGATIONS OF DVT IN YOUNG PATIENT OR RECURRENT CASES:**
 - PROTEIN C&S, ANTI-THROMBIN-3, LUPUS ANTICOAGULANT

TREATMENT

PROPHYLAXIS

FOR ALL PATIENT

- ☑ Early ambulation
- ☑ Active exercise
- ☑ Post-op. Hydration

FOR HIGH RISK GROUPS

- ☑ Intra-Op Intermittent Pneumatic Compression
- ☑ Prophylactic LMW heparin

CURATIVE TTT

DVT

FOR COMPLICATIONS

GENERAL

Bed rest for 7-10 days, Vitamin E, Elastic stockings

DRUG

SURGICAL

GREENFIELD FILTER

Indications:

- Contra-indication to Anticoagulants e.g. :
 - Hypertension
 - Past History of Migraine, On NASIDs → PU
- RECURRENCE OF P.E. inspite of full heparinization

ANTI-COAGULANTS

- Heparin for 10 days
- Introduce Oral anti-coagulants at the 7th day
- Stop heparin at the 10th and continue oral anticoagulants for 3-6 ms (If 1st DVT), 1 year (if 2nd), or For life (if 3rd)

FIBRINOLYTICS

- In the first 3 days Streptokinase, urokinase Recently: **RECOMBINANT TPA**
- INDICATIONS:
 - Isolated Ilio-femoral DVT
 - Impending venous gangrene "Phlegmasia cerula dolens"
- CONTRAINDICATIONS:
 - Within 10 days of major operation
 - Within 2 months from stroke

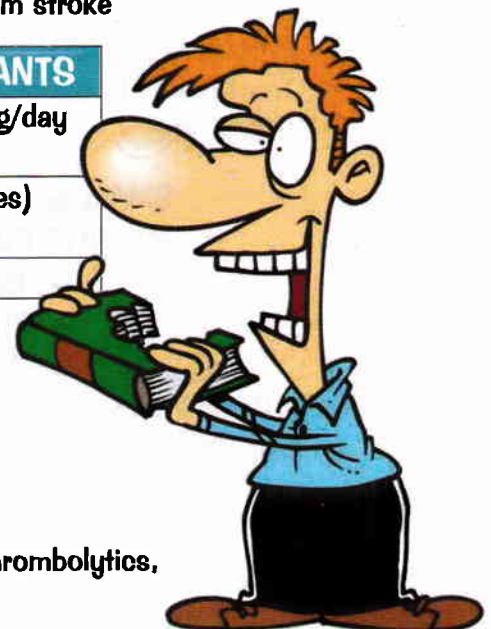
	HEPARIN	ORAL ANTICOAGULANTS
Dose	5000 IU Loading then 1000-2000 IU/Hr	10 mg Loading then 5 mg/day
Measurement	PTT (twice normal :25-36 sec)	PT, INR (2.5-3.5 times) N :11-14 sec
Antidote	Protamine sulfate	Vitamin K

Recently:

LMW HEPARIN 1mg /12 hours SC

TTT OF COMPLICATIONS:

- PULMONARY EMBOLISM: Morphine, O₂, Thrombolytics, Anticoagulants, Embolectomy
- POST PHLEBITIC LIMB: Compression Bandage



PULMONARY EMBOLISM

SMALL EMBOLI

- ☒ Impacted in the peripheral arterioles
- ☒ **SILENT EMBOLISM**
- ☒ Recurrence → Pulmonary hypertension

MEDIUM SIZED EMBOLI

- ☒ Impacted in the branches of pulmonary artery
- ☒ **PULMONARY INFARCTION:**
C/P:
 - Severe pleuritic pain
 - Dyspnea
 - Hemoptysis

LARGE SIZED EMBOLI

- ☒ Obstruct main stem → sudden death
- ☒ Obstruct 1 major branch → Acute RHF

ETIOLOGY:

- Secondary to DVT, Infective endocarditis, Other emboli

INVESTIGATIONS:

- **SPIRAL CT: "MOST ACCURATE"** ... Clot appears as filling defect ...
- **Pulmonary angiography: "Most accurate but INVASIVE"**
D-DIMER: (if +ve → Continue investigations, -ve → Stop)
- **Ventilation perfusion tests:**
NORMAL VENTILATION SCAN, FILLING DEFECT IN PERFUSION SCAN
- **Blood tests:**
 - ↑LDH, Serum Alkaline phosphatase
 - Normal Bilirubin (↑If HF occurs)
 - ABG → Hypoxia, Normal PCO₂
- **Radiology:**
 - ECG → P-Pulmonale, Axis deviation to the Right
 - CXR → Normal in 50% of cases, Wedge shaped peripheral capacity

TREATMENT:

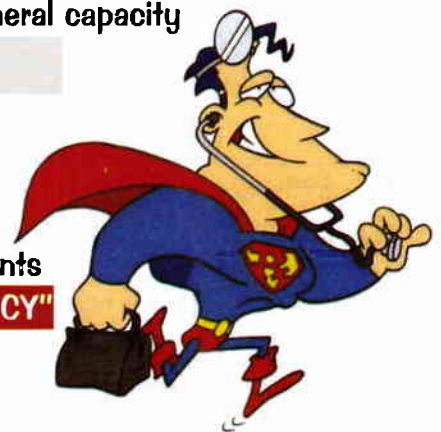
- Prophylaxis & TTT. of DVT
- Treatment of pulmonary embolism:
CURATIVE

- SMALL & MEDIUM SIZED EMBOLI → Anticoagulants
- MASSIVE PULMONARY EMBOLISM **"EMERGENCY"**
 - 1- Cardiac catheterization
 - 2- Thrombolytics → Streptokinase
 - 3- Assess Cardiac function/6 hours

If NO improvement → urgent pulmonary embolectomy after 6 hours

RECURRENCE

- Prophylaxis by IVC Filter



VARICOSE VEINS

DEFINITION: Dilated, elongated, tortuous superficial veins of L.L.

	PRIMARY V.V. (85%)	SECONDARY V.V. (15%)
Etiology	☒ IDIOPATHIC ☒ Congenital mesenchymal Weakness: (Marphan \$, Ehler danlos \$, Askar \$) ☒ Congenital valvular incompetence ☒ <u>Aggravating factors:</u> Female, High parity, marked obesity, prolonged standing	:: 4 أسباب و 1 نسا :: ☒ DVT (Most common cause) ☒ AV Fistula: - CONGENITAL: Klipple trenaury \$ - ACQUIRED: Butcher's Thigh ☒ Aneurysm ☒ Burger disease ☒ Pelvic tumors, Pregnancy
Pathology	Incompetent Perforators Dilated superficial veins	Incompetent Perforators, Dilated superficial veins + DEEP SYSTEM IS OCCLUDED
Clinical picture:		
Symptoms:	☐ Cosmetic disfigurement, Symptoms of complications (pigmentation, Itching, Ulcer) ☐ Dull aching, sensation of heaviness with sense of hotness at the end of the day or on prolonged standing ☐ PATIENT: Around 30 years ☐ PAIN: MILD ☐ PAIN IS RELIEVED BY: WALKING (deep veins are intact)	☐ PAIN: MARKED, ☐ PAIN IS RELIEVED BY: LIMB ELEVATION ☐ SWELLING: PERSISTANT DIFFUSE SWELLING
Signs:	☒ GENERAL: - Signs of mesenchymal weakness ☒ INSPECTION: - Multiple dilated tortous vein along long, short saphenous veins - Blow out at site of perforator - Saphena varix - MINIMAL EDEMA - SKIN COMPLICATIONS: Less ☒ PALPATION: - Thrill on cough at incompetent sapheno-femoral junction - Dilated, Elongated, Tortous, Soft, Compressible tubules - FEGAN SIGN → Defect if felt in deep fascia opposite to BLOW OUT. ☒ PERCUSSION: - SCHWARTZ TEST ألمانيا فوق - CHERVIER TEST فرنسا من تحت ☒ SPECIAL SIGNS: - Localization of incompetent perforator → TRENDLENBERG TEST, Multiple tourniquet - DEEP SYSTEM → Perthe's Test, Modified Perthe's Test	☒ GENERAL: - Pulse, BP changes → AV fistula - Heart examination → AV fistula ☒ INSPECTION: Same as 1ry V.V. + - VEINS CROSSING INGUINAL LIGAMENT - MASSIVE EDEMA - MORE COMMON SKIN COMPLICATIONS: Pigmentation, Dermatitis, eczema, resistant ulcer, Lipodermatosclerosis ☒ PALPATION: Same as 1ry V.V. + ☒ AUSCULTATION: - Machinery murmur → AV fistula ☒ SPECIAL SIGNS: Same as 1ry V.V. +

CORONA PHELECTACIA

EARLIEST SIGN OF CVI

Ankle/Maleolar flare → Dilated sub-dermal veins at the medial malleolus with thin fragile skin → **BLUE BLEB**

	PRIMARY V.V. (85%)	SECONDARY V.V. (15%)
Investigations	✧ DOPPLER , DUPLEX - Reversal of Blood flow with Vlasvalva maneuvver or Muscle squeeze - Thrombosis - Dilated Tortuous veins, Incompetent valves ✧ INVESTIGATIONS FOR COMPLCIATIONS: - Plain X-ray→ Varicose ulcer + Periostitis - Biopsy→ Malignancy	✧ ARTERIOGRAPHY (A-V Fistula)

TREATMENT

PRIMARY

SECONDARY

	UNCOMPLICATED & ASYMPTOMATIC	UNCOMPLICATED & DISFIGUREMENT	COMPLICATED OR PAINFUL	TTT. OF THE CAUSE
	CONSERVATIVE	INJECTION	SURGICAL	
	CONSERVATIVE	INJECTION	SURGICAL	
Indications	▪ Early,uncomplicated ▪ unfit for operation	▪ Moderate case ▪ C/O : Disfigurement ▪ Redisual V.V. after Operation	▪ Large primary VV ▪ Complicated cases	
Method	⊕ Re-assurance ⊕ TTT. Of PPT factors ⊕ Elastic stocking ⊕ LL elevation ⊕ Vitamins, VENOTONICS	INJECTION SCLEROTHERAPY by Bucrylate Recently : MICROSCLEROTHERAPY	⊕ If Sapheno-femoral Junction→ TRENDLENBERG'S OPERATION ⊕ If above Knee→ TRIPLE LIGATION of perforators ⊕ If All Perforators→ SC STRIPPING	
Complications		☒ Syncope ☒ Extravasation ☒ DVT	☒ Bruises, discomfort , Pain ☒ Nerve injury (sensory, motor) ☒ Venous thrombosis	

COMPLICATIONS

POST-PHLEBITIC \$	OTHERS
VENOUS COMPLICATIONS	SKIN COMPLICATIONS
 ☒ LL edema ☒ Post-traumatic Hemorrhage ☒ Superficial Thrombophlebitis	 ☒ Pigmentation, dermatitis, eczema ☒ Varicose ulcer ☒ Lipodermatosclerosis ☒ Malignancy→ MARJOLIN ULCER (SCC) ☒ TALIPUS EQUINUS
MANAGEMENT OF COMPLICATIONS	
Skin	▪ Cleanliness, Rest, Limb elevation ▪ Cortisone, Zinc Oxide
Hemorrhage	▪ Elevation, bandage
Marjolin Ulcer	▪ Excision by safety margin, ▪ Cross leg flap
Venous Ulcer	▪ Early→ Conservative TTT. ▪ Recurrent→ Cocket& Dodd Operation ▪ If failed→Excision& flap

VENOUS ULCER

DEFINITION: Discontinuity of epithelium resulting in a 3D conical defect in relation to high venous pressure on L.L.

MOST COMMON CAUSE IS POST-PHLEBITIC LIMB SECONDARY TO DVT

ETIOLOGY

Activation of the entrapped WBCs in the tortuous capillaries
نظرية شوماخر



PAHOLOGY:

- ☒ SITE: Gaiter area (just above the medial malleolus)
- ☒ SIZE: Variable
- ☒ NUMBER: Solitary
- ☒ EDGE: Irregular → Sloping, serrated → Punched out
- ☒ FLOOR: Granulation tissue
- ☒ BASE: Indurated
- ☒ MARGIN: Pigmentation & dermatitis
- ☒ LNS: Enlarged if there's secondary infection



COMPLICATIONS:

- ☒ Infection, Hemorrhage, Osteomyelitis, Perostitis, Marjolin ulcer

INVESTIGATIONS:

- ☒ For the cause: Doppler, Duplex

TREATMENT

ULCER

VARICOSE VEINS

CONSERVATIVE

- ☒ Rest, elevation of limb
- ☒ Compression stockings
- ☒ Dressing with saline, anti-septics
- ☒ Debridement

SURGICAL

COCKET & DODD OPERATION

- ☒ IF FAILED: Excision & Covering by Cross leg skin Flap

- ☒ Trendlenberg's Operation
- ☒ SC Stripping

FOR PREVENTION OF RECURRENCE:

- ☒ Continuous usage of elastic stockings
- ☒ Leg elevation

LYMPHATIC System

TB LYMPHADENITIS

	BLOOD BORN	LYMPHATIC BORN
Origin	☒ GENERALIZED AFFECTION: - Miliary TB - Pulmonary, renal TB	☒ LOCALIZED AFFECTION: - UPPER DEEP CERVICAL LNs - Mediastinal LNs - Mesenteric LNs
Pathology	☒ Organism reaches LNs through BLOOD "HILUM" ☒ Affects MEDULLA ☒ NO ... Affection of capsule, Matting, Caseation, Cold abscess	☒ Organism reaches LNs through LYMPHATICS "AFFERENTS" ☒ Affects CORTEX ☒ EARLY ... Affection of capsule, Matting, Caseation, Cold abscess ☒ COLLAR STUD ABSCESS ... perforates deep fascia ☒ SINUS ... it breaks down
Clinical picture	☒ PATIENT... OLD AGE ☒ Manifestations of Pulmonary TB.. Dyspnea, cough, Expectoration, hemoptysis ☒ Affected LNs: - Enlarged - RUBBERY, NOT MATTED - Not tender	☒ PATIENT... CHILD ☒ TB Toxemia, manifestations of Pulmonary TB ☒ Affected LNs: - Enlarged - MATTED - Not Tender ☒ Cold abscess → Fluctuant ☒ Sinus → Undermined edge, Cyanotic margin
Complications	☒ Systemic spread ☒ Cold abscess, Sinus, HOT COLD abscess (2ry infection) ☒ Pressure manifestations ☒ Calcification	
Investigations	☒ LABORATORY: - Leucopenia with relative Lymphocytosis - $\uparrow$ESR > 100 ☒ FOR LNS → Aspiration, Smear, Biopsy under G.A. ☒ FOR PULMONARY TB → X-ray, Tuberculin test, Sputum analysis	

TREATMENT

MEDICAL

- * **SANATORIAL TTT**
(sun, air, nutrition)
- * **Anti-TB drugs**
Combination for 9 months
(INH + Rifampicin + Streptomycin)

INH is a must
بیموته جوه ال
(Caseous material)

SURGICAL

Indications:

- * Failure of medical TT
 - * Biopsy
 - * Single accessible group of LNs
- #### Contra-indications:
- * Multiple groups (BLOOD BORNE)
 - * Bad general condition

COMPLICATIONS

COLD ABSCESS

- * Sanatorial & Medical TTT
- * Aspiration by Z-technique + Injection of Streptomycin OR
- * Incision with No application of drains

SINUS

- * Sanatorial & Medical TTT
- * Repeated dressing with Streptomycin Powder
- * Excision

LYMPHEDEMA

DEFINITION: Accumulation of lymph in the interstitial space due to Lymphatic obstruction with edema of the overlying skin which becomes thick & corrugated

INCIDENCE:

- More in **FEMALES, LOWER LIMBS**
- If Familial → **MILROY'S DISEASE**

ORGANISM:

- **W. BANCROFTI**



TYPES

CONGENITAL

- ♣ Lymphedema Congenital, Precox, Tarda
- ♣ Varicose Lymphatics

ACQUIRED

- ♣ Filariasis
- ♣ Irradiation
- ♣ **ELEPHANTIASIS SURGICA**
- ♣ Malignant Obstruction (Brawny edema)
- ♣ Cellulitis

CLINICAL PICTURE

- ♣ Discomfort
- ♣ Swelling & Heaviness.. **EDEMA IS FIRST PITTING THEN NON-PITTING**
- ♣ Disturbance of function :
 - Thickening of skin, Restricted mobility, Recurrent Infections

TREATMENT

PALLIATIVE

- ☒ Exercise
- ☒ Intermittent pneumatic Compression
- ☒ Intermittent Compression Pump
- ☒ 4 layers- Band
- ☒ Antibiotics
- ☒ TTT of Cause

SURGICAL

ONLY IF THERE'S DISABILITY

- ☒ Knodoleon's Op
- ☒ Swiss Roll cake' Op
- ☒ Amputation if hugely swollen, ulcerated, Infected

N.B. Results of surgery aren't promising

LYMPHOMA

	HODGKIN'S	NON-HODGKIN'S
Pathology	☒ LYMPH NODES: - SITES: CAM (Lower deep cervical → Axillary → Mediastinal LNs) ☒ MACROSCOPIC PICTURE: - Enlarged, discrete early → matted later - Rubbery - CUT SECTION: Pink homogenous with loss of architecture, Intact capsule - SPLEEN → Toffee Almond appearance ☒ MICROSCOPIC PICTURE: - REED-STERNBERG CELLS - PLEOMORPHISM - Loss of architecture	☒ LYMPH NODES: - SITES: More than 1 group (MULTICENTRIC) ☒ MACROSCOPIC PICTURE: - Early discrete → Amalgamated
Clinical picture	☒ AGE & SEX: Adolescent & middle age male ☒ CONSTITUTIONAL SYMPTOMS: - Fever, Itching, Loss of weight - Anemic manifestations. ☒ SWELLING: - Slowly progressive, rubbery → matted ☒ PAIN: - Pain & itching (After alcohol intake "Gordon's test" or late after infiltration) ☒ PRESSURE MANIFESTATIONS: - Mediastinal L.Ns → dyspnea, dysphagia, hoarseness & Horner's. ☒ ABDOMINAL SWELLING: - Splenomegaly, Para-aortic L.N., intestinal Obstruction & obstructive jaundice.	☒ AGE & SEX: Extremes of age, Male ☒ SWELLING: - Rapidly progressive, Hard → Amalgamation later ☒ PAIN: - Pain & itching (After alcohol intake "Gordon's test" or late after infiltration) ☒ ABDOMINAL SWELLING: - As Hodgkin's but more common
Investigation	○ For diagnosis → excision biopsy if L.N. is involved. ○ For D.D. & staging: - CBC (pancytopenia , & ESR > 100) - LFT (↑ bilirubin due to obstructive, HC or hemolytic) - KFT (↑ uric acid due to tumor lysis \$) - CXR, Abdominal U/S & C.T., BM puncture. - Staging laparotomy is rarely used (replaced by SPIRAL CT Scan).	
Treatment	1- GENERAL TREATMENT: Vitamins, Blood transfusion, Iron therapy 2- DEFINITIVE TREATMENT ... according to stage... - Ia, Ib, IIa → Radiotherapy - IIb → Radiotherapy + Chemotherapy - III, IV → Chemotherapy	CHEMOTHERAPY ...(Multi-centric)... As Hodgkin's lymphoma + ... <u>IN NODULAR TYPE</u> → Chlorambucil <u>IN DIFFUSE TYPE</u> → Cyclophosphamide, Vincristine & Prednisone.

CLASSIFICATION OF HODGKIN LYMPHOMA:

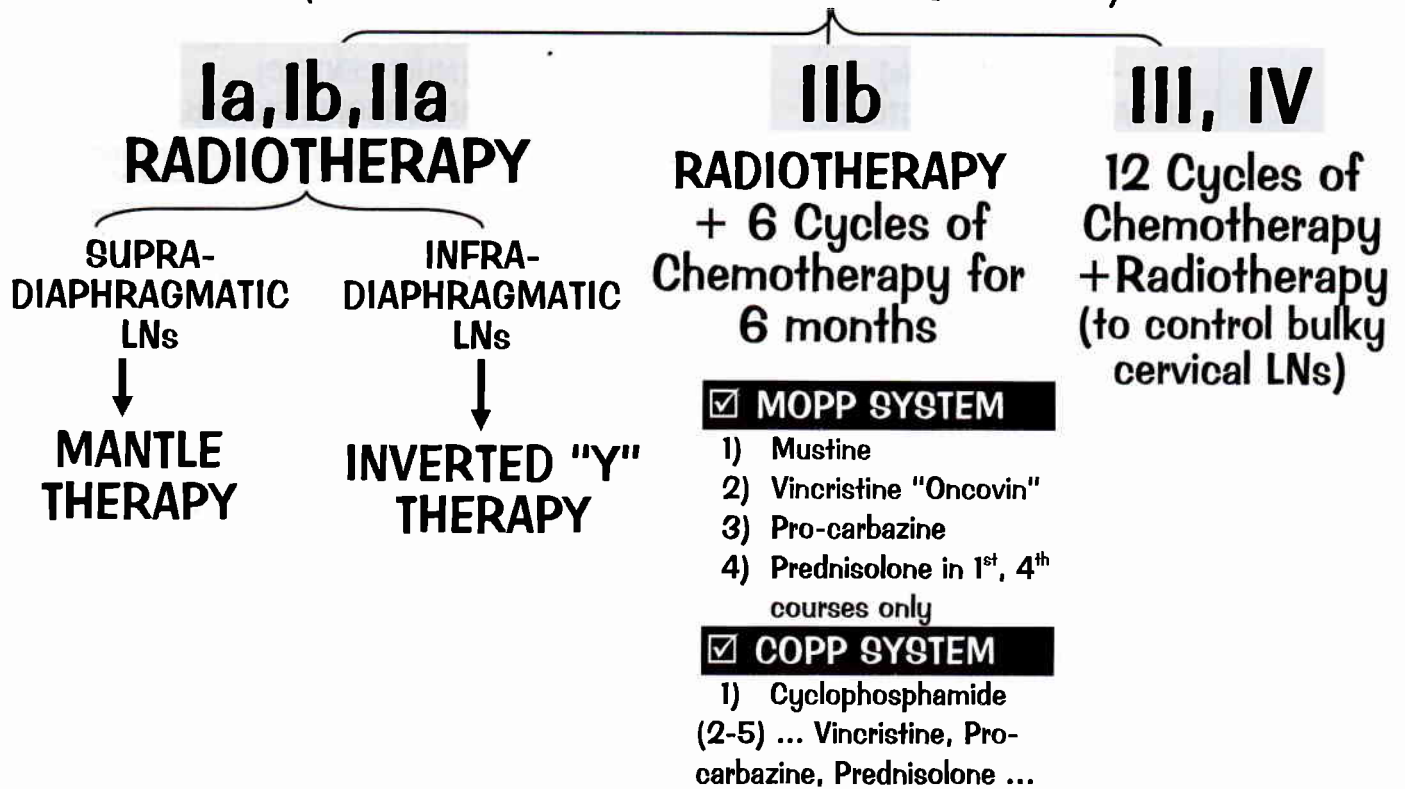
- ☒ Stage I → Enlarged 1 group of LN. above or below diaphragm
- ☒ Stage II → Enlarged more > 1 group of LN. above or below diaphragm
- ☒ Stage III → Enlarged LN. above & below diaphragm
- ☒ Stage IV → Extra-nodal affection (liver & bone marrow)

BURKITT'S LYMPHOMA

- ☒ Highly malignant B-cell tumor
- ☒ Etiology : EBV, Malaria
- ☒ INCIDENCE: Males, Age < 12 years, Eastern Africa
- ☒ Site: **MULTIFOCAL, JAW (50%)**
- ☒ Microscopic picture: **STARRY SKY APPEARANCE**

TTT OF HODGKIN LYMPHOMA

(ACCORDING TO STAGING)



WHAT'S THE ROLE OF CORTICOSTEROIDS ?

- ☒ Lowers Hypercalcemia in late stages
- ☒ Relieve itching
- ☒ Raises the mood
- ☒ Improves CBC, appetite

INDICATIONS OF SURGICAL EXCISION

- ☒ Biopsy
- ☒ Laparotomy
- ☒ Intestinal Obstruction
- ☒ Jaundice

LYMPH NODES IN RELATION TO DIAPHRAGM

- | | |
|---|---|
| ☒ SUPRA-DIAPHRAGMATIC | ☒ INFRA-DIAPHRAGMATIC |
| - Cervical | - Para-aortic |
| - Mediastinal | - Pelvic |
| - Axillary | - Inguinal |
| | - Splenic axis |



VASCULAR TWEETS!!



ARTERIAL SYSTEM

- Intermittent claudication May be an indication for bypass surgery if it interfere which the patient normal life.
- Sensory loss may be reversible after revascularization.
- In diabetic foot infection drainage through a small incision over the pointing area is enough in most patient and debridement should be avoided especially in presence of good vascularization to avoid excessive bleeding.
- The presence of osteomyelitis of small bones of the foot might be an indication for amputation in Septic foot infection in diabetics.
- Allen test is done to detect Dominant blood supply of the hand.

VENOUS SYSTEM

- Acute severe deep venous thrombosis can present by the limb
- A- Warm, swollen with turgid calf muscles.
- B- Cold, swollen with sever cyanosis.
- The main line of treatment of lipodermatosclerosis is Compression elastic stockings.

LYMPHATIC SYSTEM

- Hodgkin's disease can present with 2ry lymphedema if the inguinal LNs are involved.
- Purities is not a marker of poor prognosis in Hodgkin's lymphoma.
- Weight loss more than 10% in the last six months, Night sweats, and Reed-Sternberg cells in the bone marrow are markers of poor prognosis in Hodgkin's lymphoma



1. Patient with history of mitral stenosis & AF presents with sudden onset of severe pain in his lower limb, toes cannot be moved, complete loss of sensation, pallor and progressive coldness of the limb.

O/E absent peripheral pulsation. No past history to claudication pain.

Acute ischemia

2. Old aged patient with positive history to D.M, smoking, or hypertension, dyslipidemia & atherosclerosis presents with cramping pain comes on walking & exercise at first with certain distance, relieved by stopping now the pain get worse and forces him to stop associated with cramping pain in abdomen in relation to meals.

Chronic LL ischemia associated with post-cibal angina.

3. Old aged patient with positive history to D.M, smoking, or hypertension, dyslipidemia & atherosclerosis presents with persistent rest pain, presence of ischemic ulcer or small gangrenous patches.

Critical Limb ischemia.

4. Young female presents with bilateral pain and cyanosis in tip of her fingers precipitated by exposure to cold or emotional stress. No trophic changes with intact peripheral pulsation.

Reynaud's disease. 1 ry.

5. Young male heavy smoker complaining of chronic ischemia in a limb

Burger's disease.

6. 7- young female complaining of tingling and numbness along the ulnar side of the hand and forearm with weakness of small muscles of the hand also claudication pain in upper limb with exercise.

Thoracic outlet syndrome.

7. Middle aged male or female presents with slowly growing swelling adjacent to the hyoid bone, anterior to sternomastoid, compressible, pulsatile, moves from side to side not vertical.

Carotid body tumor. (chemodectoma).

8. Old age patient with positive history to atherosclerosis or syphilis presents with cystic compressible swelling a cross of artery, gives expansile pulsation.

Arterial aneurysm

VASCULAR QUESTIONS



QUESTION
Bank!!
as2elet el seneen :)

- DVT " PDFs, C/P, Investigations, Fate & complications"

(Kasr: 2007, 2009- Ain shams: 2003, 2011-

Azhar F: 2007, 2004, 2009-

Azhar M: 2010, 2008, 2004)

- Acute ischemia

(Kasr: 2008, 2011- Ain shams: 2002, 2008, 2009 -

Azhar F: 2006, 2009- Azhar M: 2001, 2000)

- Manifestations, Complications and TTT. of varicose veins

(3in shams: 2000 - Azhar F: 2005, 2004 -

Azhar M: 2012, 2007, 2001)

- Diagnosis & TTT. chronic ischemia

(Ain shams: 2005, 2010)

- Chronic Venous insufficiency

(Azhar F: 2007)

- Etio-pathology of lymphedema

(Kasr: 2011)

